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## ORIGINAL ARTICLES.

### **LARGE CAVERNOUS ANGIOMA, INVOLVING THE INTEGUMENT OF AN ENTIRE AURICLE, SUCCESSFULLY TREATED BY DISSECTION, FREE RESECTION OF DISEASED TISSUE, AND LIGATION OF THE AFFERENT TRUNKS IN SITU BY A SPECIAL METHOD.**

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AN apology is scarcely needed for the presentation of a case of cavernous angioma, involving the integument of the whole auricle. The treatment of angioma in general has been a source of worry to the surgeon from the remotest antiquity to the present day, and the therapeutic methods of election still remain a problem to be solved in individual cases. The extent and character of the lesion, especially whether limited to the superficial or the deeper tissues, or both; the region involved, and other complicating circumstances, profoundly affect the application of the fundamental principles of treatment. What is expected of the surgeon in all cases is, first, the eradication of the evil; and, second, if possible, the correction of the deformity; and any observation that will test the value of controverted methods of treatment, or that will aid in formulating a plan of attack that will realize in the end either one or both of these desiderata, is worthy of consideration.

The importance of the subject is accentuated when, as in the present instance, a tumor of this character presents itself in so conspicuous a locality as the auricle, and is allowed to ripen into the fullness of its most dangerous maturity, when life is threatened by spontaneous ulceration and hemorrhage. Under these circumstances the difficulties in the way of an ideal conservative result cannot be overestimated.

While an exhaustive discussion of the surgical treatment of cavernous angioma would be out of place in this report, a few remarks restricted to the consideration of auricular angioma may serve as a pertinent introduction to this clinical report.

The auricle at first sight would appear, on account of its isolation and semi-pedunculated attachment to the head, to be a most favorable field for

the control of the vascular and other tumors that not infrequently develop in its tissues. But its abundant arterial supply from the branches of the carotid system, and the free collateral anastomoses that connect these with the subclavian artery, render the complete and *permanent* control of its arterial supply most difficult to effect. In addition to this, it should be remembered that an angioma is a neoplasm, in which the process of neo-vascular formation is progressive, and that the curative effect sometimes obtained from the ligation of the direct afferent trunks *in situ* and of the parent trunks, at a distance, is only operative in virtue of the diminished nutrition consequent upon the anemia of ligation. Even a moderate collateral supply is, therefore, competent to reestablish the peculiar morbid histogenesis that ends in neo-vascular formations. The condition is not simply varicose, cirroid, or aneurismal, but is neoplastic.

This understanding of the subject justifies the aggressive attitude of modern surgery that, whenever practicable, adopts as an initial procedure the total extirpation of the morbid tissue.

But the conspicuous and exposed position of the auricle, which is so important an appendix of the face, seriously interferes with the application of the more sweeping operative measures that would be unhesitatingly applied to tumors of this nature in less exposed regions. The unsightly mutilation produced by the amputation of the ear can only be permitted as an extreme measure, to be reserved almost strictly for malignant neoplasms.

In the simple and early forms of nevoid disease that usually precede the more serious and progressive erectile-tissue growths, the ordinary methods of securing tissue-destruction or "perturbation" (Broca) may be utilized with advantage and excellent cosmetic result; but when the whole auricular integument has been involved by one immense growing pulsatile tumor, in which the skeletal framework participates, then it is impossible to destroy the evil without leaving marked traces of the destructive force employed.

How to cure a generalized cavernous angioma of the auricle and still preserve this organ with some resemblance to its original normal appearance, is the question. Many believe that this result may be obtained with the aid of either thermic or electrolytic cauterization, by potential caustics, or by interstitial injections of irritants or coagulants judiciously

applied, etc.; but experience has convinced me that in the cases of angioma in which the cirroid or arterial element dominates, no reliance can be placed upon these methods, and that nothing short of the actual extirpation of the diseased tissue itself, after securing the preliminary ligation of the afferent trunks *in situ*, can secure a permanent result. One of the most instructive lessons gathered from the present case teaches that the auricle may be divested entirely of its cutaneous covering, and the cartilage itself be considerably remodelled without causing it to suffer necrotic changes. If this can be done with comparative ease and safety, then the way to the radical, and yet conservative and cosmetic treatment of auricular angioma, is clear and satisfactory.

F. B., a German-American, aged thirty-two, applied at my office for treatment, September 11, 1890. He is a tall, thin, but healthy man, who has an excellent family history and no record of cachectic or diathetic disease. He is married and the father of three very robust children. His present disease has been a source of worry to him since childhood. His mother has no recollection of any noticeable peculiarity in his ear as an infant, but when he grew older and was sent to school, he attracted the attention of his playmates by a peculiar reddish discoloration of his right ear. This discoloration became more pronounced as he grew older; it assumed a darker hue and resembled a mother's mark. The abnormal color spread gradually over the whole ear, which grew larger and more prominent than its fellow. He suffered no serious inconvenience, however, until about five or six years before his consultation with me.

The disease appeared then to have become suddenly more active. The color deepened to a dark purplish-red and the whole skin became thickened, so that the ear grew much larger, heavier, and deformed. About this time also he began to notice that when lying with his head on his pillow at night the ear would throb and "hum" annoyingly. Any excitement or violent exertion would invariably aggravate the noise. About a week before consultation, the patient was awakened from his sleep by feeling himself bathed with blood, which, to his horror, he discovered spurting freely from a break in the cuticle of his ear. This spot had been noticed some days previously to have grown darker than the surrounding skin, and showed signs of ulceration; in fact, this threatening appearance had decided him to submit to an operative procedure at the hands of one of the local surgeons whom he had consulted, when the unexpected hemorrhage occurred, which altered his plans and brought him to my hands. He was nearly unconscious from the bleeding when a physician arrived and stopped the hemorrhage by pressure and the free application of the tincture of the perchloride of iron. In consequence of this application the ear appears to have become very much inflamed and eczematous; so much so, that, when the patient called at my office, I feared he was suffering from acute erysip-

elas, but a careful examination dispelled this impression.

When the affected ear was uncovered, it instantly commanded attention because of its extraordinary appearance. Its elephantine size, dusky bluish color, and visible pulsation made it remarkable. The normal left ear, from the tip of the helix to the extremity of the lobule, measured barely  $2\frac{1}{4}$  inches in length, and from the outer margin of the helix to the base of the tragus,  $1\frac{1}{2}$  inches in breadth. On the other hand, the abnormal ear measured  $3\frac{1}{2}$  inches in length, nearly 3 inches in breadth, and over 1 inch in thickness. The outline of the auricle was lost in many places, owing to the redundancy of the soft parts, which simulated the hypertrophy of elephantiasis; the color was dusky blue and purplish-red in places, and on the spot where the hemorrhage had taken place, corresponding to the anti-helix just above the concha, there was a black, superficial slough, surrounded by a red inflamed area. The whole ear pulsed visibly with the heart-beat, so that the pulse could be counted by looking at the ear. By palpation, a diffused pulsation and thrill could be detected over the whole ear, but the distinct throbbing of the larger afferent trunks could be felt in the upper and anterior portion near the tragus, corresponding to the situation of the anterior auricular branch of the temporalis, and posteriorly behind the concha, where the posterior auricular branches of the occipitalis enter the pinna.

A distinct plexus of veins could also be detected and compressed as a soft mass lying in the zygomatic region, in front of the tragus and helix. It was also ascertained that the whole cartilage of the auricle had been much hypertrophied, though the outline of the chondral skeleton had been preserved.

Pressure upon the common carotid immediately arrested all pulsation, diminished the color, and reduced the size of the ear.

In view of this evidence, the diagnosis of cavernous angioma was established.

The danger of secondary hemorrhage and the advanced stage of the disease also decided me to adopt the ligation of the external carotid as the initial treatment.

Two days after, the patient was removed to the Touro Infirmary, where, after careful antiseptic preparation, the external carotid was exposed and ligated.<sup>1</sup> The control of the circulation of the ear by the external carotid was demonstrated before tying the knot. At the same time an incision was made in the pretragus, where a large venous plexus was exposed, and ligated in three places. Fine, twisted, sterilized silk ligatures were used for the arteries and veins. The wounds healed entirely *per primam* and without any complication.

In ten days the patient returned home. All the humming had ceased; the ear grew smaller, paler, and all pulsation was entirely arrested.

The patient resumed his regular avocation (local solicitor for a brewing company), but was instructed to call at regular intervals for examination.

<sup>1</sup> Drs. P. E. Michinard and W. Schuppert and members of the resident staff assisted me in this operation.

For a period of over three months the patient enjoyed a total freedom from pulsation, and the ear appeared to diminish in size, but at the end of this time his vigilance was unhappily rewarded by the discovery of a slight pulsation in the fossa of the antihelix. Fifteen days after, this pulsation was decided and unmistakable; in a month, pulsation was also recognizable in the posterior surface of the concha.

I concluded from this that a collateral circuit had been established, 1st, through the temporal and facial branches of the opposite side; and, 2d, through the anastomoses of the profunda cervicis of the superior intercostal of the subclavian with the princeps cervicis of the occipital. The return of pulsation was decidedly ominous, and I decided to interfere vigorously *in loco* before allowing the circulation to resume its primitive vigor.

It was evident that the ligation of the opposite external carotid would be useless, as it could not affect the abundant supply from the right subclavian, the ligation of which would have been required to absolutely control the collateral supply. As the amputation of the ear always remained a last resort, the risk of so heroic a procedure as the ligation of the first portion of the subclavian was, of course, not to be entertained.

The problem to solve was to save the ear and yet arrest the progress of the disease. The use of local coagulants naturally suggested itself, and the safety of electrolysis recommended this eminently conservative procedure as a method of election. But the total failure of this method, after a careful and persistent trial, in a recent case of venous nevus of the cheek, followed by a brilliant and immediate cure by the injection of carbolic acid solution, decided me in favor of the latter agent. The aim here was not so much to coagulate the blood in the tumor, but to excite an aseptic inflammation in the peri-vascular and cavernous spaces of the angioma with the hope of compressing the afferent vessels with peri-arterial exudations and retractile tissue-proliferations, and of filling the areolæ with similar products of inflammatory action. By using strong dilutions of carbolic acid this object had been successfully obtained in large venous nevi of the face in the practice of Professor Souchon, of this city, and in several small capillary nevi, in children, in my own *clientèle*. The large, passive clots, which are so favorable to embolism, and which result from the injection of the iron salts, are not observed when dilute carbolic acid solutions are used in interstitial injections, and it is largely due to this fact, no doubt, that the practice which is so general in this country, in the hands of the most irresponsible class of practitioners, of injecting hemorrhoids with carbolic acid, is so rarely followed by disastrous consequences. At any rate, I began to inject the angioma in question with from 10 to 20 minims of solution thrown into the center of the foci of greatest pulsation. At first solutions of 20 per cent. in water, with 2 per cent. cocaine hydrochlorate, were tried tentatively; then these were increased to 30, 40, and 50 per cent. carbolic acid. After each injection, even of the weaker solutions, the pulsation in the area

injected was very much diminished, but after the immediate effects of the injection had passed away, the pulsation returned, although not so vigorously. Two or three foci were injected at a time. The patient was thus treated at first every week, and then every two weeks. Beyond a stinging pain, no unpleasant accidents followed these injections, except on one occasion, when the almost pure acid was injected in a particularly rebellious spot over the antihelix. Here a small slough followed, but it was detached without any bleeding or other serious consequences.

So much control over the growth was obtained by this mode of treatment, that the patient thought himself well, and did not return for several months.

In March, 1892, he returned, however, complaining that the subjective pulsation and humming at night were returning. The ear was more tumefied, and approaching its earlier ugly appearance, and the pulsation had, indeed, returned. I was now seriously contemplating the advisability of amputating the auricle, when I thought of a method of temporarily controlling the circulation of the pinna that had the double advantage of securing complete local hemostasis as well as anesthesia, and that would allow of a direct attack upon the morbid tissues, and permit the ligation of the afferent trunks *in situ*.

The patient was averse to any extended or adventurous operation, and rather inclined toward an amputation of the ear. The suggestion of a bloodless operation under cocaine anesthesia reassured him, and he consented. Of course, prolonged local anesthesia, with cocaine, could not be thought of without the aid of elastic constriction. This was secured in the following manner:

The hair was cut short and shaved for a considerable area around the ear, and the skin thoroughly prepared by washing with soft soap, alcohol, and bichloride solution.<sup>1</sup> Four punctures were made at approximately equidistant points in front, above, below, and behind the ear, through which a continuous circle or atmosphere of cocaine (4 per cent.) solution was created in the peri-auricular tissues. Four ordinary strong pins were then made to transfix the tissues at approximately equidistant points in the cocaineized area; then a long, elastic thread was wound around each pin successively, and made to compress the root of the auricle very thoroughly. The pins thus served as binding-posts, and effectually prevented the ligature from slipping. After winding the constrictor several times around the ear, the pulsations in the tumor were entirely arrested; the skin, however, presented a cyanosed appearance.

An incision down to the cartilage of the ear was now made along the convex margin of the helix from its upper extremity to the lobule. The anesthesia was complete. With this incision a considerable gush of dark venous blood took place, and the

<sup>1</sup> This operation was performed at Eye, Ear, Nose, and Throat Hospital of this city, where every assistance was rendered by Dr. A. W. de Roaldes, surgeon-in-charge, and the painstaking members of the resident staff.



turgid, erectile swelling collapsed. This hemorrhage was due only to the escape of the blood actually retained in the cavernous spaces; after the first gush the hemostasis was absolute. I then proceeded with the dissection of the skin, by which the whole cartilaginous skeleton of the pinna was exposed clearly to its perichondrium. A posterior flap, consisting of the whole skin covering the posterior sur-

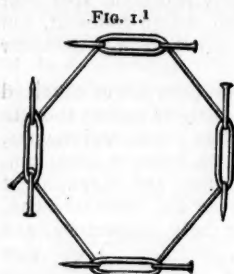
FIG. 1.<sup>1</sup>

FIG. 2.

face of the auricle, and one anterior to the tragus, readily denuded the whole chondral framework. A careful search was now made for all recognizable afferent arteries at the points where previous observation had shown that the supplying vessels entered. These visible vessels were now surprisingly few, and were all held by four artery-forceps, and were ligated with finest silk. In the meantime, the thinness of the collapsed angiomatous skin, and the shrinking of the whole ear were truly astonishing to those who had seen its quasi-elephantine proportions just before the arrest of the circulation by the constrictor. It was evident from the dissection that there was very little subcutaneous tissue, indeed, and that the cavernous spaces now collapsed were lodged in the true skin, which was *entirely* involved in the angiomatic process. It also became evident from this that a *radical* removal of the diseased tissue could only be accomplished by the total excision of the tegumentary covering of the auricle. Such a procedure would have left a naked cartilaginous skeleton without any protecting skin-covering unless this was secured by grafting.

Without a precedent to guide me under the circumstances, I hesitated to remove the angiomatous skin-flaps in their entirety for fear of chondral necrosis, and I decided simply to resect as much as possible of the redundant skin, of which there was

certainly a great abundance. I also trimmed the whole outer margin of the hypertrophied cartilage, removing a strip corresponding to the whole length of the helix, and a large elliptical section of the much enlarged concha. This procedure reduced the skeleton of the auricle to the size of its normal fellow, and, furthermore, greatly diminished its unsightly and outstanding prominence. Having thus diminished the skeletal framework by at least one-half, it was also easy for me to excise over one-half of the superfluous skin that originally covered it, thereby removing a great portion of the diseased tissue.

The operation was conducted thus far without pain or loss of blood, as the anesthesia and hemostasis were perfect, thanks to the elastic constrictor.

The field was now carefully scanned for recognizable vessels, and a few additional ligatures applied at points where suspicious structures existed at the root of the auricle. Finally, to assure the control of all the afferent vessels, the elastic constrictor was removed. It was well that I did so, for no sooner was the elastic tension relieved than the thin, pale, and shortened flaps of skin became turgid and discolored, and numerous jets of blood instantly spurted in all directions from the stumps of the short skin-flaps, and immediately flooded the field of operation. The prompt application of a handful of dry sterilized gauze held over the bleeding flaps, firmly pressed with the palm of the hand, controlled the hemorrhage and allowed a more deliberate inspection and gradual exposure of the bleeding-points. Fully ten forceps were at one time engaged in securing the bleeding-points, but owing to the promptness with which they were applied a final and complete hemostasis was secured, though only after much expenditure of time, during which the courage and endurance of the patient were being severely tried. There was no real physical pain, the anesthesia being maintained throughout in spite of the removal of the elastic constriction, but it was the mental distress which the possession of full consciousness and the appreciation of the proceedings caused the patient.

After the torsion of some and the ligation of the majority of the bleeding-points the skin was re-adjusted over the cartilaginous auricle and the wound closed by sutures, and a typical dry aseptic dressing applied. Apart from the nervous tension, which almost threw the patient into a fit of hysterics, there was no remarkable immediate sequel to the operation. On the third day the patient was able to leave the hospital (March, 1892) and drive home. Here, however, he did not do so well. A week had elapsed, and the wound was healing rapidly, when an attack of erysipelas (due to contamination from exposure of the wound) was inaugurated in the operated ear, and prostrated the patient. The erysipelas assumed the ambulating type, and for four weeks the disease travelled all over his body, beginning in the head and only ending when it had reached the toes. The fever, delirium, and general exhaustion consequent upon this disastrous complication nearly killed the patient, but he finally rallied and recovered, and is at present in excellent health.

<sup>1</sup> These cuts are intended to give a schematic representation of the author's method of elastic constriction with the aid of pins to secure local anesthesia and hemostasis in operations on the auricle. In total amputation of the auricle, this method is unreliable because of the lack of cartilaginous support. The cocaine is injected first in the spots subsequently occupied by the pins. An atmosphere of cocaine solution is thus made to diffuse itself around the root of the auricle. The constricting elastic thread is then wound around the pins several times in the manner shown in Fig. 1. Fig. 2 shows the pins and constrictor in relation to the auricle. The posterior pin should be nearer the concha than is shown in the diagram. As the elastic thread is wound around the root of the pinna, the ear becomes markedly pedunculated, and its outline more contracted and circular, the lobule being thrown up toward the helix. In all minor operations on the ears this method can be very easily and satisfactorily applied.



*Present condition of the ear.* Notwithstanding the liberal pruning of the hypertrophied cartilage, and large resection of the angiomatic skin, the ear is still larger than its fellow. The partial excision of the helix is now noticeable because the outline of the cartilage is not hidden by the mass of redundant and turgescient integument that first covered it. The color of the ear is its most disfiguring characteristic. It is of a dusky bluish-red, but thin and adherent to the underlying cartilage; a slight varix stands in relief on the anterior border of the helix; posteriorly, the skin is in some places puffy, thick, and compressible, showing the persistence of erectile tissue. But the great difference that is at once perceived between the present and past condition, is the total absence of all diffused or localized pulsation. The last operation was performed in March, 1892, and since that time (eight months) the auricle has remained the same in size and appearance and freedom from pulsation. The patient attends to his usual work, and considers himself well. This long period of quiescence encourages me to believe that the disease has been finally controlled, and will not recur.

In reviewing the history of this case the salient features that are most noticeable are:

1. The sudden transformation of an innocent nevoid spot into a voluminous and rapidly growing angioma.
2. The extent of the disease, which involved the entire tegumentary covering of the auricle.
3. The preponderance of arteriectasis in the morbid tissues.
4. The participation of the entire thickness of the skin in the angiomatic process.
5. The hypertrophy of the cartilage from hypernutrition.

The therapeutic lessons to be derived from the study of the case are:

1. The advantage of early and radical interference in all nevoid diseases, before the advent of the later and more formidable erectile-tissue stage.
2. The danger of ulceration and hemorrhage from neglecting advanced cavernous angiomas, an urgent condition that interferes with the choice of therapeutic methods when ulceration has been established.
3. The inability of ligature of the external carotid to control permanently the circulation of the auricle, on account of the early reestablishment of the collateral circulation through the opposite carotid and corresponding subclavian branches.
4. The inability of interstitial or parenchymatous injections of carbolic acid to control extensive cavernous angiomas in which the arterial preponderates over the venous ectasis.
5. The facility with which prolonged local anesthesia with cocaine and hemostasis of the auricle may be obtained by means of elastic constriction, applied by the method adopted in this case.

6. The possibility of permanently arresting the progress of advanced cavernous angiomas of the auricle by ligating the afferent arteries *in situ*, provided this be done deliberately under the prophylactic hemostasis of elastic constriction.

7. In all cases of cutaneous angioma, as in the present instance, in which the skin is diseased throughout, it is utterly impossible to restore the parts to their normal appearance without complete excision. The progress of the disease may be arrested, but the cosmetic result will remain poor.

8. The entire cartilaginous framework of the auricle may be bared of all tegumentary covering and fully resected without seriously compromising its vitality, provided the connections of the concha with the temporal auditory cartilage are maintained.

Finally, profiting by the light of present experience, if called again to operate on this or a similar case, I would proceed as follows:

1. Ligate the external carotid on the corresponding side.
2. After waiting for the wound of ligation to heal, and before the collateral circulation is reestablished, anesthetize the patient and control the circulation of the ear by the method previously described, and resect the whole angiomatic skin, leaving only those areas in which the normal tissues remain. If necessary, remove the whole cutaneous envelop of the auricle, and cover the raw surface immediately with Thiersch grafts.
3. Before applying grafts ligate all afferent trunks in the auricular skin-stumps, before and after renewing the elastic constrictor.
4. Dress the wound with a typical aseptic dressing. The advantages of such a procedure are obvious. Not only would the diseased area be radically removed, and thus the possibility of recurrence eliminated, but the cosmetic result would be much more satisfactory.

#### THE AMEBA COLI: ITS IMPORTANCE IN DIAGNOSIS AND PROGNOSIS. WITH THE REPORT OF TWO CASES.<sup>1</sup>

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SINCE the first observation, by Osler,<sup>2</sup> in this country of the ameba coli in the pus of an hepatic abscess, occurring in a man with chronic dysentery, it has been found by several observers in the stools of patients with both acute and chronic dysentery and in the pus of liver-abscesses complicating the disease.

<sup>1</sup> Read at the Semi-annual Meeting of the Medical and Surgical Faculty of Maryland, at Easton, November 15, 1892.

<sup>2</sup> Osler: Johns Hopkins Hospital Bulletin, vol. i, No. 5, 1890.

That the form of dysentery associated with the presence of this organism is frequent in this country is proved by the numerous cases that have been reported from widely-separated localities: the cases of Dock,<sup>1</sup> in Texas; those of Stengel,<sup>2</sup> in Philadelphia; those of Councilman and Lafleur,<sup>3</sup> in Baltimore, and the case of Eichberg,<sup>4</sup> in Cincinnati.

The admirable contribution to our knowledge of the relation of the ameba coli to a certain distinct form of dysentery and its complications, recently made by Councilman and Lafleur, has shed much light upon the diagnosis and prognosis of the disease, as well as upon its etiology and pathologic anatomy. Their work has given added interest and importance to the recognition and study of this disease.

The first case of dysentery in which amebæ coli were found and their presence thought to hold a causal relation to the disease was that of Lösch, quoted by Councilman and Lafleur. Lösch gave a good description both of the lesions and of the organisms. Koch and others, quoted by Councilman and Lafleur, found them in intestinal ulcers and in liver-abscesses occurring in patients with dysentery. Kartulis has studied the ameba coli in the same lesions in the dysentery of Egypt. This observer has made important contributions to the literature of the subject, and has given clear descriptions of the organism. Councilman and Lafleur, however, were the first to work out in an exhaustive manner the lesions of the dysentery associated with the ameba coli from the clinical, etiologic, and anatomic standpoints. These observers studied, clinically and anatomically, fifteen cases of the disease under consideration in the Johns Hopkins Hospital and in Baltimore, and have shown that the affection is identical with the so-called tropical dysentery. Their description of the organism agrees with those of Lösch, Kartulis, and Osler.

The shape of the ameba coli when inactive is round or oblong, but when active it is of irregular outline. In size it varies from ten to twenty micromillimeters in diameter. It has an ectosarc and an endosarc, more clearly seen in the active forms. In the resting state the amebæ are more highly refractive. The ectosarc is composed of a pale, homogeneous, hyaline substance; the endosarc is refractive, and contains vacuoles of varying size.

In some a more or less definite nucleus can be made out. Amebæ coli present two varieties of

motion, a progressive motion, by which they change their place, and another motion consisting in the putting out and retracting of pseudopodia. The latter is the more frequent and characteristic motion. The activity and frequency of these movements vary greatly, and are influenced by a variety of conditions. They are most active at the body-temperature, and become slower and cease when the organisms are exposed to heat or cold, and various chemical agents. These pseudopodia are always rounded or blunt at the end; they vary much in size, and may form long, straight, or irregular projections. An ameba may change its position by putting forth a large pseudopodium into which its contents rapidly pour.

These amebæ often contain various foreign bodies, such as red blood-corpuscles, pus-cells, the nuclei of cells, and bacteria. These elements lie usually in the center of the organism.

Councilman and Lafleur succeeded in staining the amebæ coli with various dyes, both after drying them on cover-slips and after hardening them in the tissues in different preserving fluids. Very good results were obtained after hardening in alcohol, and staining in methylene-blue. The central portion stains irregularly, and numerous fine granules, not unlike micrococci, are seen.

The following two cases show the practical diagnostic and prognostic importance of searching for and finding the amebæ coli in the stools and in the expectoration:

CASE I.—A. P., a Russian Pole, twenty-eight years of age, married, was admitted to our service at St. Joseph's Hospital, April 12, 1892, complaining of weakness and frequent stools, accompanied by tenesmus and abdominal pain. His family history was negative. He had always been healthy, except for an attack of malarial fever several years ago. His present illness began three weeks ago while at work at Sparrow's Point, Md. After a hard day's work he drank a great deal of ice-water, and the next day was attacked with severe abdominal cramps and a profuse diarrhea. He left Sparrow's Point after a few days, and went to Curtis Bay, Md. There he improved for a time, but eight days later he was again attacked with abdominal cramps and a copious diarrhea. A great deal of pain accompanied the stools, which numbered about fifteen in the twenty-four hours, were blood-stained, and at times contained shreds of "membrane." On admission the following note was made: His frame large, body emaciated, skin sallow, expression anxious, and he looks ill. The lips are pale, the tongue moist, and covered with a heavy white fur. The temperature is 100°, pulse 80, of fair volume; the respirations are 24, unembarrassed. The chest is well formed, the costal angle broad, expansion equal. The percussion-note is hyper-resonant posteriorly. On both sides, on auscultation, there are sonorous and sibilant râles, and prolonged expiration. These sounds are best

<sup>1</sup> Dock: Texas Medical Journal, April, 1891.

<sup>2</sup> Stengel: Medical News, November 15, 1890.

<sup>3</sup> Councilman and Lafleur: Johns Hopkins Hospital Reports, vol. ii, 1891.

<sup>4</sup> Eichberg: Medical News, August 22, 1891.

marked posteriorly. Cardiac dulness begins at the fourth rib. The apex-beat is in the fifth intercostal space, in the nipple line. The heart-sounds are heard over a large area at the apex; they are moderately loud, and are clear at both apex and base. The liver-dulness begins at the sixth rib in the mammary line, and extends to a distance of 1 cm. below the costal margin. The liver-dulness is not apparently increased behind. The lower border is palpable. The spleen is negative. The abdomen is flat and retracted. It is resonant everywhere. There is distinct tenderness to pressure along the line of the descending colon and at the hepatic flexure of the colon. There is distinct tenderness to pressure along the line of the descending colon and at the hepatic flexure of the colon. There is no mass felt anywhere.

On April 14th: The patient had had twenty stools since the preceding day. There was profuse sweating of the forehead, head, face and back. Temperature 100°, pulse 108, and slightly dicrotic, the respirations 28, natural. The patient appeared to suffer no special pain. Just below the liver-margin there was slight tenderness on pressure. There was some tenderness on pressure in the right iliac fossa, where there was also resonance over a small area. The abdominal wall was somewhat resistant here. There was no special tenderness over McBurney's point. Just above Poupart's ligament there was a small area, where, on deep percussion, a loud resonant tympany was elicited.

The appearance of the stools was suggestive of amebic dysentery. The stools were copious, and had a very offensive odor. They were quite fluid, and in general of a grayish color, with brownish-red streaks of blood-stained material and yellowish-gray necrotic looking masses, and also other grayish gelatinous-looking masses.

On microscopic examination of a fresh stool there were seen numerous red blood-corpuscles, leukocytes, and large oval epithelioid cells in great numbers. There were also cylindrical epithelial cells to be seen. There were numerous bacteria, a few elastic fibers, and a great deal of granular detritus. Numerous actively moving amebæ, of the size and appearance of the amebæ coli, were observed. These amebæ were generally in quite active motion, sending out large pseudopodia with great frequency. The central portion of the amebæ was very refractive, and filled with granular detritus. The material in the pseudopodia was of a steel-gray color, and hyaline and translucent. The amebæ seen contained one or several vacuoles. Examination of the urine was negative.

On April 15th the general condition was about the same. The stools were unchanged in number and in general character. There was tenderness on pressure over the whole abdomen, not limited to the line of the colon. Over the region of the cecum and in the whole of the iliac region there was marked tenderness on deep pressure. The Skodaic tympany noticed on the 12th instant had disappeared. The liver-area was not further increased, the spleen negative. He had several times vomited a watery, mild-colored fluid during the day.

On April 20th the condition of the patient had grown steadily worse. For the last three days he had vomited at frequent intervals. The stools varied from twenty to thirty in the twenty-four hours. The temperature was 99°, the pulse 120, very weak. The surface of the skin was covered with a cold, clammy sweat, the eyes were sunken, the tongue moist and clean, the lips blue. There was some cough, but no expectoration. The patient had a very peculiar putrefactive odor. The belly was flat and retracted; there was no pain on pressure, and no dulness. The liver dulness had not further increased.

The patient died April 21st. An autopsy was not allowed.

This case was apparently a hopeless one on admission to the hospital. It is undoubtedly to be classed with those of the gangrenous variety of this form of dysentery. From the epigastric pain and the hepatic enlargement present, it is not improbable that there was abscess of the liver. As an autopsy was not allowed, it is to be regretted that the liver was not explored with the aspirating needle after death.

CASE II occurred in the service of Professor S. K. Merrick, at the Maryland General Hospital during June, 1892. The patient had been under the care of Dr. Charles H. Rose, of Cordova, Md., who has kindly furnished us the following facts concerning his previous history and an account of the patient while under his observation:

J. W. W., twenty-seven years of age, single, of a nervous temperament, and sedentary habits. The family history is good. The patient is a telegraph-operator, and smokes cigarettes to excess; he weighs, in health, about 120 pounds. He has suffered with chronic constipation for some years. Except for this he always had good health until the winter of 1891, when he had blood-poisoning, following a blow in the face, received while living at Hadley, Delaware. From this he fully recovered; but two months later he was again under Dr. Rose's care with a severe attack of influenza, which was followed by acute rheumatism. He was not able to return to work till October, 1891. In February, 1892, he was again seen by Dr. Rose, and was then complaining of constipation, general malaise, and irregular fever. There was loss of appetite, a yellow tint to the conjunctiva, and emaciation. He gradually became worse, and during May had chills, followed by high fever and profuse sweating. For some time there had been a troublesome cough, accompanied by copious expectoration.

The following is furnished me by Professor Merrick: On admission to the hospital the patient was emaciated, the skin of a sallow hue; there was a harassing cough, with copious expectoration. The morning temperature was 100° F., the evening temperature 103°, followed by very profuse night-sweats. The pulse was 110, the respirations 28. The ribs were prominent, the expansion good, except at the right base posteriorly. There was a localized bulging of the chest on the right side posteriorly, extending from the inferior angle of the scapula to the extreme base, and from 5 cm.



to the right of the spine to a point 2 cm. outside the posterior axillary line. Mensuration showed this side of the chest to be 15 mm. larger than the left side. Over this area there was absolute percussion-dulness, approaching flatness. The lungs were clear to percussion elsewhere. On auscultation over the area of dulness the vesicular murmur was either distant or absent. Tactile and vocal fremitus were lost here. Both lungs were clear elsewhere. These signs, together with the copious expectoration of a thick, glairy muco-purulent sputum, were thought to indicate the presence of an empyema that had broken into a bronchus. The introduction of a moderate-sized aspirating needle was not followed by the flow of any fluid. The liver-dulness was not increased anteriorly, and air entered the lung from apex to base in front. The lower border of the liver was not palpable. The spleen and abdomen were negative.

Thinking that the process was probably tuberculous, Professor Merrick sent us a specimen of the sputum for microscopic examination.

Before examining the sputum we knew nothing of the history of the case or of the physical signs present. The specimen when examined was twenty-four hours old. In general appearance the sputum was somewhat frothy, of a grayish color, and contained numerous grayish nummular lumps. There were no reddish streaks or other sign of hemorrhage. Cover-slip preparations were made, and after drying, stained in the usual way with carbol-fuchsin, and decolorized with a solution of sulphuric acid containing methylene-blue, thus counterstaining the nuclei. After careful examination of six preparations no tubercle-bacilli were found.

But at first glance my attention was drawn to a great number of very large cells present. These cells were considerably larger than the ordinary alveolar epithelial cells so often seen in the sputum. Some of these cells appeared to contain irregular and degenerated nuclei. There were also large numbers of pus-cells and a considerable number of what appeared to be alveolar epithelial cells. In order the better to study the large cells referred to, unstained cover-slip preparations of the sputum were made. In these there appeared large numbers of these cells. In size they varied from three to five times the size of an ordinary leukocyte, and were in general round or oval in outline; some were irregular in shape.

Their appearance was usually homogeneous and colorless, sometimes finely granular. Some contained fine granular detritus and fine fat-globules; and a few appeared to contain degenerated nuclei, suggestive of the nuclei of pus-cells. In some there were bacteria; no definite nucleus was made out. These bodies differed from the alveolar epithelial cells present in that the latter were smaller and had the typical nuclei. The large cells described were not seen to move. Nevertheless, we were convinced that they could be nothing else than amebæ. As the specimen was twenty-four hours old, the fact that the bodies did not move did not militate against the idea of their being amebæ.

We obtained from the hospital a freshly expectorated specimen of sputum.

Unstained cover-slip preparations of this showed large numbers of actively moving amebæ, some being very much more active than others. They were very much more numerous than the other cells present, there being three or four in a single field. They varied much in shape; some being round, some oval or oblong, and still others, especially the actively moving forms, very irregular in outline. There were many in active motion, sending out pseudopodia with great frequency and rapidity, causing such a rapid change of shape that it was impossible to draw them. The central portion of the amebæ contained vacuoles, finely granular material, and often fine fat drops and bacteria, and in some there were the nuclei of leukocytes. The pseudopodia presented a homogeneous, translucent, steel-gray appearance. A more or less well-marked endosarc and ectosarc could be made out. The sputum also contained many pus-cells, numerous alveolar epithelial cells, and some elastic tissue fibers. No liver-cells were recognized in the specimens examined.

Although we had no knowledge of the history of the case or of the physical signs present, we felt warranted in stating in our report to Dr. Merrick that the patient had an amebic abscess of the lung, and in suggesting that it was probably a hepato-pulmonary abscess. Professor Merrick invited us to see the case with him the next day, and after going over it carefully we agreed that there was no doubt but that the patient had a hepato-pulmonary abscess associated with the presence of the ameba coli.

Careful questioning of the patient brought out the fact that some time previously he had had an attack of dysentery from which recovery was slow, but that for the last six months his stools had been normal. He also stated that in March last, after a severe attack of coughing and dyspnea, he coughed up over a quart of thick creamy pus. During the whole time of his stay in the hospital his stools were well formed, normal in appearance and free from mucus and blood.

The patient was also seen by Professor Robert W. Johnson, who advised against operation. Quite a large aspirating needle was afterward introduced into the dull area, but no fluid escaped through it. The lumen of the needle, however, contained a single drop of thick, creamy, gelatinous-looking pus, which on microscopic examination showed numerous actively moving amebæ. The patient was in the hospital under observation for one month, when he returned home, where he died in the middle of August last. An autopsy was not allowed.

Councilman and Lafleur<sup>1</sup> divide cases of amebic dysentery into three clinical groups: (1) dysentery of moderate intensity; (2) grave or gangrenous dysentery; and (3) chronic dysentery.

According to them, cases of the first variety show muscular weakness, pallor, indifferent decubitus,

<sup>1</sup> Loc cit., p. 453.

dull expression of the face, dryness and inelasticity of the skin, and a pale and flabby tongue. The temperature is often normal, not usually going above 100° F.; the pulse ranges from 70 to 90 per minute; and the respirations from 18 to 30. The appetite is impaired and the sleep is disturbed by more or less frequent stools.

In the grave or gangrenous variety they state that the face is drawn, slightly cyanosed or flushed, the expression anxious, and the mind usually clear. There is complete anorexia and intense thirst, the abdomen is greatly retracted, and there may be profuse sweating. The temperature is frequently normal or even subnormal, the pulse is rapid, the respirations accelerated. In the chronic form there is progressive anemia and marked loss of flesh.

The diarrhea is the principal symptom of the disease, and it is subject to great variations in character and frequency. Councilman and Lafleur<sup>1</sup> call particular attention to the irregular intermissions and exacerbations to which it is subject. As pointed out by them, the exacerbations may occur at any period of the disease, and may come and go suddenly, lasting from a day to a week or ten days. They lay especial stress upon the intermissions, which may last from a day to three weeks or longer, during which time the feces are soft or even well formed, but usually have mucus adherent to them; and they draw attention to the fact that these exacerbations and intermissions are most marked in cases complicated by abscess of the liver.

The stools vary in number and amount within wide limits. In our first case there were as many as thirty in twenty-four hours; but this is unusual. The amebæ are found, however, in the stools in all three forms of the disease. As was first shown by Lafleur,<sup>2</sup> they are most numerous in the small gelatinous masses in the stools. The appearances described in Case I may be taken as a type of the characters usually met with in this form of dysentery. As is shown in this case, the stools contain, on microscopic examination, besides the amebæ, red blood-corpuscles, pus-cells, columnar epithelial cells, bacteria of various kinds, elastic tissue, and even unstriped muscle-tissue, granular detritus, and undigested food; there are also large oval epithelioid cells which may be mistaken for amebæ.

The character of the sputum in these cases has been sufficiently dwelt upon in the report of our second case.

The stools of patients suffering with dysentery or diarrhea should be examined, especially in hospitals, as routine practice. Councilman and Lafleur failed to find the ameba coli in the stools of patients with catarrhal and diphtheritic dysentery,

and from their observations it would seem that these organisms are found in the stools only in the ulcerative or so-called tropical dysentery. A matter, however, of great importance is the question of what proportion the frequency of the occurrence of this last form of dysentery bears to that of the other two.

This can be determined only by the examination of the stools of a large number of patients with these several forms of dysentery. No one, however large his experience, can be certain that a given case of dysentery is due to the ameba coli until microscopic examination of the stools is made.

The clinical value of the differentiation of this form of dysentery from the other forms lies of course in the important bearing that this has upon the questions of diagnosis and treatment. For this reason, particularly in cases of chronic diarrhea, especially if it is of a remittent character, a careful study of the stools is important. It is in these that mistakes are most likely to be made. As this disease, whether acute or chronic, is a grave affection, and as the complications and the final outcome in a given case cannot be foreseen, it is necessarily a more serious disorder than the other forms of dysentery. Experience has shown that the chronic variety is more likely to be followed by complications than the acute.

The most important and the most fatal complication is the formation of liver-abscesses, which, when situated on or near the upper surface of the right lobe—and this is a favorite seat—often perforate the diaphragm and involve the lower lobe of the right lung. In this event there is a hepato-pulmonary abscess. Pus from this is usually sooner or later discharged through a bronchus. Liver-abscess occurred in eight out of the fifteen cases reported by Councilman and Lafleur,<sup>1</sup> and in four of these there was subsequent involvement of the lower lobe of the right lung. Of these fifteen cases, ten were acute, and of these acute cases three were complicated by liver-abscess. In all five of the chronic cases there was liver-abscess, and in four of these the lower lobe of the right lung was involved. In only one of the acute cases did this occur.

Stengel<sup>3</sup> reports four acute cases, and in none of these was there liver-abscess. Eichberg<sup>3</sup> reported one case of the chronic form with hepato-pulmonary abscess, followed by death after operation. The ten cases reported by Dock we have not had access to. Our second case, without doubt, had hepato-pulmonary abscess; in our first case it is uncertain whether or not the liver was involved. At any rate, it is a striking fact that, including our own cases, of the seventeen cases reported from Balti-

<sup>1</sup> Loc. cit., pp. 456-7.

<sup>2</sup> Lafleur: Johns Hopkins Hospital Bulletin, vol. i, 1890.

<sup>1</sup> Loc. cit., p. 490.

<sup>2</sup> Loc. cit.

<sup>3</sup> Loc. cit.

more nine had liver-abscess, and of these last there were five cases of hepato-pulmonary abscess.

In a case of dysentery in which the ameba coli has been found in the stools, whether the process is acute or chronic, one is, of course, on the lookout for involvement of the liver, and this is early suspected if not definitely recognized. But given a case of localized dulness at the base of the right lung, either in front or behind, with loss or absence of the vesicular murmur, with or without discoverable enlargement of the liver, and with the presence of copious muco-purulent and slightly blood-tinged expectoration, careful inquiry should be made to find out if there is not a history of diarrhea. The microscopic examination of the sputum in such a case will settle the diagnosis.

The prognosis of these cases is, of course, grave. Of the six American cases of hepato-pulmonary abscess proved to be of amebic origin that we have referred to, five died while under observation and one (Councilman and Lafleur, Case IX) recovered.

A diminution in the number of amebæ present in the discharges, or their total disappearance, is usually to be taken as a good omen. The same is to be said of finding dead amebæ in discharges that have previously contained only the actively moving forms.

An interesting and suggestive observation has lately been made in this connection by Flexner,<sup>1</sup> who found active amebæ not to be distinguished morphologically from the ameba coli in the pus of a cervical abscess following necrosis of the lower maxilla.

Discharges suspected of containing amebæ coli, whether from the bowel or from lung or liver abscesses, should be received in a covered receptacle, preferably warmed, put in a warm place and examined as soon as possible. It should be remembered that exposure to cold renders the movements of the amebæ sluggish or causes them to cease altogether. Often careful warming of the slide over the Bunsen flame will cause sluggishly-moving or even motionless amebæ to show active motility. This procedure is often of great assistance in doubtful cases. For detailed study of the organisms the warm stage should be used.

In doubtful cases of liver-abscess or lung-abscess it is usually justifiable to explore with the aspirating needle. As the pus in these abscesses is often too thick and tenacious to flow through the needle, even when strong pressure is used, the lumen of the sharp end of the needle should always be carefully examined. In this way, even when pus fails to flow through the needle, enough may be obtained to demonstrate the presence of amebæ, and thus a positive diagnosis can be made.

<sup>1</sup> Flexner: Johns Hopkins Hospital Bulletin, vol. iii, No. 25, 1892.

### GENITAL TUBERCULOSIS IN WOMEN: A CONSIDERATION OF ITS FREQUENCY AND CLINICAL HISTORY.<sup>1</sup>

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It has long been known that the male generative organs are not infrequently the seat of tuberculosis, and a considerable amount of practical importance has been attached to the affection. On the other hand, it is only within a comparatively recent period—since the more general performance of celiotomy—that attention has been directed toward similar affections in the female, and even now such cases are generally regarded as pathologic curiosities.

In the present article I shall endeavor to show that tuberculosis of the female generative organs is of far more frequent occurrence than is generally supposed, and that it is an affection of practical importance, and deserves to be classed among the affections with which we are all liable to meet.

Ever since the time of Morgagni it has been known that the generative organs of tuberculous women occasionally present signs of marked tuberculosis, and the appearance of caseous endometritis and caseous pus-tubes is not unfamiliar to those who have witnessed a considerable number of autopsies on tuberculous patients.

It is generally stated that about one case of tuberculous disease of the female genitals is met with in every hundred autopsies of women dead from all causes (Pollock, Schramm, and Winkel); but authors differ greatly as to the frequency of its occurrence in women dead of pulmonary tuberculosis, Courty stating that it occurs in 1 per cent., and Nimias and De Christoforis in 8 per cent. of all autopsies on tuberculous women, the average frequency being from 2½ to 3 per cent. These figures serve to indicate that the affection is not of rare occurrence; but as the cases presented only secondary lesions in advanced examples of pulmonary or peritoneal tuberculosis, they attracted no attention during life, and after death were considered only as of pathologic interest.

The discovery by Geil (1857), that in rare instances the genital tract might present the only focus of tuberculosis in the entire body, naturally gave the affection an importance which it had not possessed previously. Similar cases were from time to time described by various observers, but it was not until Cohnheim and Verneuil had pointed out the possibility of infection through sexual intercourse, and Babes had demonstrated tubercle-bacilli in the vaginal secretions, that anything like a general

<sup>1</sup> Read at the Semi-annual Meeting of the Medical and Surgical Faculty of Maryland, at Easton, November, 1892.



interest in the subject was aroused. This interest has been further increased by the removal by celiotomy, by various operators, of tuberculous tubes and ovaries.

For several years it has been my custom to describe accurately all specimens pertaining to the diseases of women that come within my reach, whether from the operating or autopsy table. All the specimens, whether they appear to be of interest or not, are accurately described in the fresh state, and then hardened and prepared for microscopic examination. This method of research has yielded most interesting and instructive results in more than one instance, and has served to demonstrate that genital tuberculosis is of far more frequent occurrence than has been believed.

In 169 cases of celiotomy, in which the tubes and ovaries were removed for various causes, including pus-tubes, adherent tubes and ovaries (peri-salpingo-oöphoritis), uterine myomata, and in some instances perfectly normal tubes and ovaries, I found two cases of tuberculosis of the tubes, which were so marked and characteristic that the diagnosis was made at the operating-table—that is, 1.25 per cent. of all of the tubes and ovaries removed for various causes presented macroscopic signs of tuberculosis.

On examining microscopic sections from all of my cases, I was surprised to find in six other cases, which appeared to be ordinary "adherent tubes and ovaries" (peri-salpingo-oöphoritis) or pus-tubes, that I had to deal with tuberculous affections of the tubes or ovaries, or both. These six cases would have escaped observation had it not been for the routine microscopic examination of all specimens, for they presented no macroscopic signs of tuberculosis whatever.

These cases I have designated as "unsuspected tuberculosis," and it is to them that I wish to direct particular attention.

Adding these six unsuspected cases to the two cases in which a macroscopic diagnosis was made, I have found altogether eight cases of genital tuberculosis in 169 cases of tubes and ovaries removed by celiotomy, or 4.75 per cent.

As all of the cases of genital tuberculosis were found in specimens that presented marked inflammatory changes, we may eliminate all other cases in considering the actual frequency of the disease. Accordingly, we have had 96 cases of inflammatory disease of the uterine appendages, and of these, eight were tuberculous, or 8.2 per cent. In other words, we find that we have to deal with genital tuberculosis in about every twelfth case of celiotomy for the removal of tubes and ovaries the seat of inflammatory disease. This is certainly a startling frequency, especially if it be considered that the affection is considered as very rare.

Another point of great interest is the ratio between the "unsuspected" cases and those in which a macroscopic diagnosis is possible. Of my eight cases, only two were recognized on macroscopic examination, while the other six were only discovered on microscopic examination. In other words, 75 per cent. of my cases were "unsuspected," and would have escaped observation were it not for the careful microscopic examination of all specimens.

My experience thus far indicates that genital tuberculosis is three times more frequent than is generally supposed; and it is evident that such a frequency indicates that the disease is of considerable practical importance, as will be seen further on.

In all of the eight cases the tubes were affected, and in three, the ovaries; and in all but two, unmistakable tubercle-bacilli were readily demonstrated; and in all, the histologic characteristics of tuberculosis were so perfectly well marked that there was absolutely no possibility of error. In only two of the cases was there clinical evidence of tuberculosis elsewhere than in the genital tract; so that in the other six the lesions were probably primary in the genitals.

Tuberculosis may affect any portion of the genital tract, the order of frequency in which the various portions are involved being as follows: Tubes, uterus, ovaries, vagina, cervix, and vulva. The lesions may occur as miliary tubercles, tuberculous ulcerations, or diffuse tuberculous infiltration (caseous degeneration), or as a combination of any or all of these forms.

Owing to the fact that in the female the genital and urinary systems are distinct from one another, while in the male they unite to form a common genito-urinary apparatus, genito-urinary tuberculosis is three times less frequent in the female than in the male.<sup>1</sup>

ETIOLOGY.—The causal relation existing between the tubercle-bacillus and tuberculosis has been so conclusively demonstrated, and so universally accepted, that the question of the etiology of genital tuberculosis simply resolves itself into a consideration of the various modes by which tubercle-bacilli may gain access to the genital tract.

Whether, under any circumstances, there exists a predisposition to genital tuberculosis is a question that we are as yet unable to answer; but reasoning by analogy, it is quite possible that previous inflammatory conditions, and also the changes incident to the puerperal state may act as predisposing causes.

<sup>1</sup> For particulars concerning the pathologic anatomy and the histories of the cases, etc., see my monograph, "Tuberculosis of the Female Generative Organs," in vol. iii of the *Johns Hopkins Reports* and the *Transactions of the American Gynecological Society*, 1892.

This view is apparently borne out in one of my cases, in which I found gonococci in the pus of a tuberculous tubo-ovarian abscess.

For convenience of description, I may state that there are three general modes by which bacilli may gain access to the genital tract: 1. From the patient herself. 2. From the outside world. 3. Organisms that have escaped from the patient into the outer world may in turn gain access to the vagina and other parts. This, of course, is only a variety of the first class, but it is convenient to consider it as a class by itself.

1. *From the patient herself.* (a) Blood-infection. (b) From the peritoneum. (c) From other organs.

(a) *Blood-infection.* That this is a frequent mode of infection cannot be doubted if we recall the fact that, in a large number of cases, the genital affection is really secondary to tuberculosis elsewhere. Of course, it is possible, in a given case, that coincident infection from without may have occurred; but in the large majority of cases it is not plausible to admit even this possibility.

Blood-infection is beautifully illustrated in some of the cases in which the genital affection constitutes part of a general miliary tuberculosis occurring during the puerperium, when the formation of tubercles in the uterus is seen to be most marked at the placental site.

While it is perfectly evident that it is by means of the blood that infection almost always occurs in cases in which there is some other primary focus of the disease in the body, it is probably not so apparent that blood-infection may account for some of the apparently primary cases of genital tuberculosis. It is, however, only necessary to consider the analogy that exists between some cases of primary bone-tuberculosis, for which blood-infection alone is held responsible, to see that such a mode of origin is not impossible in some instances. This position is markedly strengthened by experiments upon the production of tuberculosis by feeding animals with food containing tubercle-bacilli, in some instances the lymph-glands and other organs becoming tuberculous without evidence of any lesion in the intestine, which is manifestly the point from which the organisms are first taken up.

From the consideration of the facts here brought forward, it becomes evident that in any given case it is almost impossible absolutely to exclude blood-infection.

(b) *From the peritoneum.* It has long been recognized that tuberculous peritonitis may extend to the tubes, or *vice versa*, and for a long time this was considered to represent the chief mode of infection for the tubes (Virchow, Rokitsky, Kiwisch, and others), and no doubt peritoneal tuberculosis

is a frequent cause of genital tuberculosis. Osler states that the tubes are affected in from 30 to 40 per cent. of all cases of tuberculous peritonitis in women. Oppenheim found that of twenty-three cases the tubes were affected in twenty-one.

The experiments of Pinner, who found that small solid particles, as powdered cinnabar, when introduced into the peritoneal cavity of animals, were rapidly carried through the tubes and uterus into the vagina, also lend weight to this mode of origin.

As was pointed out by Weigert, Douglas's cul-de-sac is usually the portion of the peritoneum first affected in tuberculous peritonitis, thus indicating that bacilli, gaining access to the peritoneal cavity, in obedience to the laws of gravity, fall to its lowest part, and there exert their action. Bacilli that have thus fallen into Douglas's cul-de-sac are consequently placed in the most advantageous position to be taken up by the currents produced by the action of the cilia of the tubes, and thus to be borne on to other portions of the genital tract. An observation of Jani, a worker in Weigert's laboratory, is of especial interest in this connection, for in the tubes of a woman dead of pulmonary and intestinal tuberculosis, but exhibiting no signs of peritoneal tuberculosis, he found typical tubercle-bacilli. All of these observations teach us that bacilli, from whatever source, which gain access to the peritoneal cavity, even though they do not give rise to tuberculous peritonitis, are quite likely to be taken up by the tubes, where they may lead to the development of tuberculosis.

(c) *From other organs.* What has just been said concerning infection from the peritoneum, applies equally well to organisms gaining access to the genital tract from other organs, as the lymph-glands, the surface of intestinal ulcers, etc.

Ulcerations of the various organs adjacent to the genital tract may perforate intervening tissues, and lead to the formation of fistulous tracts, through which bacilli may be introduced directly into the genital tract.

Thus tuberculous ulcerations of the rectum or bladder may perforate into the vagina, and give rise to recto-vaginal or vesico-vaginal fistulæ (Jones, Catuffe); or intestinal ulcerations may perforate the walls of the uterus (Kaufmann), or the Fallopian tubes (Mosler), and lastly, tuberculous peri-rectal abscesses may perforate into the vagina.

2. *Infection from without.* The possibility of tubercle-bacilli gaining access to the vagina from the outside world becomes evident to anyone who considers the almost universal distribution of the organisms. No doubt bacilli are introduced into the vagina in a multitude of ways: by the examining finger, the use of foul syringes and dirty instruments, perhaps by unclean linen, etc., but especially

by coitus with men with the various forms of genito-urinary tuberculosis.

Of these various modes, we shall consider only the possibility of infection by coitus, and what may be said concerning it will apply equally well to the other modes of infection from without.

The possibility of infection by coitus was first suggested by Cohnheim, and later by Verneuil, and many articles have been written on the subject both *pro* and *con*.

There can be no possible *a priori* objection to the theory of this mode of infection, for it is quite possible that tubercle-bacilli may be introduced into the vagina during coitus with men affected with genito-urinary tuberculosis, but the question to be decided is whether bacilli so introduced can give rise to genital tuberculosis in the woman.

Of course, the resistant structure of the mucous membrane of the vagina and vaginal portion of the cervix would apparently render their infection very difficult, if not impossible; consequently, we have only to consider the effect of the introduction of bacilli into the uterus and tubes. It is evident that only a very small proportion of the bacilli introduced into the vagina could possibly find their way into the uterus, and it is probable that the great majority of those that succeeded in gaining entry into the uterus would be washed away at each menstrual period. Granting, however, that a few small miliary tubercles may be formed in the superficial layers of the endometrium, it is quite likely that they would be cast off with the exfoliated mucous membrane at each menstrual period. Accordingly, infection of the uterus by bacilli introduced from the vagina would not appear to be readily accomplished. If, however, the bacilli should chance to enter the tubes, they would meet with totally different conditions; for there they would not be exposed to the adverse influences which they encounter in the uterus, but would readily find protected places between the folds of the tubal mucous membrane, where they might develop unmolested.

These are the theoretic conditions with which we have to do, and now it remains to be seen what has been definitely proved in this direction. In 1887 Derville wrote the ablest article that has yet appeared in defence of this mode of infection. He found eight women with genital tuberculosis, having made the diagnosis in each instance by finding bacilli in the vaginal secretions, and, on examining their husbands or lovers, found that five of them had hard masses in their epididymes and testicles, which he considered of tuberculous origin. Unfortunately for the strength of his article, he did not demonstrate positively that the disease in the men was really tuberculosis.

In 1889, Cornil and Dobrolonsky stated that they

were able to produce miliary tuberculosis of the endometrium by injecting pure cultures of tubercle-bacilli into the vaginae of rabbits; but Oncarani and myself, in similar experiments, failed to obtain similar results.

As the result of my work, and from a survey of the literature on the subject, I would conclude that it has not yet been conclusively demonstrated that infection by coitus can occur; but that it is probable that it does occur in a certain proportion of cases.

3. *Infection by bacilli thrown off by the patient.* In cases of pulmonary tuberculosis, tuberculosis of the urinary organs or intestines, etc., it is perfectly possible that bacilli that have passed out of the patient's body may in some way gain access to the vagina, and thus come within the category that has just been considered. This being the case, we cannot admit that such a mode of infection has yet been proved. Moreover, in none of the cases in which such a mode of infection has been suggested will it be possible to exclude blood-infection.

CLINICAL HISTORY.—Genital tuberculosis may occur at any age, cases having been reported at the extremes of ten weeks (Brouardel), and eighty-three years (Krzywicki); but the period of life at which its occurrence is most frequent is that of the greatest sexual activity—that is, between the twentieth and fortieth years. It is in this period that the cases of primary genital tuberculosis have been observed; while the cases occurring at either extreme of age have been due, almost without exception, to secondary infection.

Unfortunately, the clinical history of genital tuberculosis, like that of tuberculous peritonitis, does not present the clear-cut characteristics that are so necessary to the early recognition of a given disease; its symptoms only too often being so masked by those of the primary affection that this involvement of the genitals is not suspected, and only found accidentally at the autopsy.

Even in the rarer cases of primary infection of the genitals the symptoms are often so obscure that the tuberculous nature of the affection is not only not suspected, but its discovery at operation or autopsy is a matter of surprise.

The symptoms accompanying tuberculous ulcerations of the vulva or vagina do not differ essentially from those produced by ulcerations of other origin, when affecting the same parts, and soon lead the patient to seek medical advice. The only point about them that is at all characteristic is their marked chronicity, and an apparent tendency to heal, which is, however, deceptive, as they nearly always recur.

In the few cases of tuberculous ulceration of the cervix on record, the symptoms have been hemor-



rhage and marked leucorrhea, which led to a clinical diagnosis of carcinoma, for which Péan, in one instance, removed the uterus by the vaginal method.

Tuberculous endometritis possesses no characteristic features. It is accompanied by profuse leucorrhea, the discharge of which frequently contains more or less caseous material; but there is nothing in its appearance to indicate the tuberculous nature of the affection. As the process invades the walls of the uterus, there is more or less hypertrophy of that organ. From the symptoms alone a diagnosis is absolutely impossible, and it is only when there are signs of tuberculosis elsewhere, or when the history of the case points to the possibility of infection from without (genito-urinary tuberculosis of the husband), that attention is directed to the possibly tuberculous nature of the disease. In some cases there are absolutely no symptoms, while in others the symptoms of the most severe forms of pelvic abscess are present. If the process be associated with tuberculous peritonitis, the latter may completely overshadow the process in the genitals. Many authors state that amenorrhea is frequently met with in these cases, but I have not found that the menstrual disturbances associated with genital tuberculosis differ from those accompanying the ordinary forms of inflammatory disease. Thus, in six of my cases, I found that menstruation was not affected in two; in two there was menorrhagia; in one, menstruation was scanty; and in the other, there was amenorrhea.

Tuberculosis of the genitals, when primary, may lead to secondary infection of other organs, and thus produce pulmonary tuberculosis, tuberculous peritonitis, or general miliary tuberculosis, and lead indirectly to the death of the patient. In other instances, whether the genital affection be primary or secondary, it may lead to death by marasmus and hectic fever, or by rupture of tubal or ovarian abscesses to general peritonitis.

**DIAGNOSIS.**—From what has been said concerning the clinical history of the affection, it becomes evident that, prior to the discovery of the tubercle-bacillus, it was impossible to make a positive diagnosis of genital tuberculosis *intra vitam*; and that now a positive diagnosis can only be made by means of the microscope. Accordingly, the difficulty of diagnosis varies with the accessibility of the affected part, and with our ability to secure its secretions for examination. In some instances, however, it is not difficult to make a probable diagnosis.

Tuberculosis affecting the vulva or vagina should be differentiated from a number of affections: the granulations in vaginitis granulosa, the papular and ulcerative syphilides, herpetic eruptions, hard and soft chancres, and carcinoma.

In the great majority of cases the affections named can readily be recognized, but if there is any uncertainty, a small portion of the affected area should be excised and submitted to microscopic examination.

It has already been mentioned that tuberculosis of the cervix has been mistaken for carcinoma, and the uterus removed under that supposition. This only serves to emphasize the importance of the excision and microscopic examination of small portions of the cervix in all cases before operation as a means of diagnosis.

If there be the slightest suspicion of tuberculosis of the uterus, the vaginal and uterine secretions should be examined with the greatest care for tubercle-bacilli. If the examination prove negative, the uterus should be curetted and the portions removed submitted to microscopic examination, when the histologic character of the tissue and the demonstration of the tubercle-bacilli will make the diagnosis absolutely certain. If examination should fail to yield positive results, a portion of the curetted tissue should be inoculated into a rabbit.

In very chronic cases of endometritis, which cannot be attributed to a perfectly definite cause, I would emphatically recommend the employment of the methods here indicated, and I feel confident that by so doing we would not infrequently meet with cases of genital tuberculosis that would otherwise have escaped detection.

The diagnosis of tuberculosis of the tubes and ovaries is far more difficult than when the disease affects the uterus or lower portions of the genital tract, simply on account of the difficulty of obtaining the secretions for examination.

I consider that it is impossible to make a positive diagnosis of genital tuberculosis simply by bimanual palpation.

A fairly probable diagnosis of tuberculosis of the tubes may be made, if, in addition to distinct tubo-ovarian masses, one can diagnosticate a tuberculous peritonitis. If the tubal tumor occur in a tuberculous woman, who presents no sign of tuberculous peritonitis, we shall not be able to make even a probable diagnosis, but in these cases we should always bear in mind the possibility of the tuberculous nature of the tubal disease. Lastly, if the process be limited to the tubes and ovaries, without any peritoneal or pulmonary involvement, I do not think that it will be possible to diagnosticate the affection by physical examination of the patient.

In some instances, no doubt, the examination of the vaginal secretion might reveal the presence of the tubercle-bacillus, but in the vast majority of cases the examination would yield negative results. In some cases of pyosalpinx, in which tuberculosis is suspected, Edebohl has recommended vaginal

puncture of the pus-sac, and the examination of its contents for bacilli. In one instance he was enabled to make a positive diagnosis before operating.

**PROGNOSIS.**—Genital tuberculosis, whether primary or secondary, is always to be regarded as a grave affection. The primary process, even if it remain limited to the genitals, always carries with it the possibility of a general infection, with its uniformly fatal termination. It also has a marked tendency to lead to the development of tuberculous peritonitis. Even if the process remain limited to the tubes and ovaries, it is always possible that it may go on to suppuration and abscess-formation, which in turn may lead to the fatal termination by marasmus and hectic fever, or, by rupture, to general peritonitis.

If, on the other hand, the genital process is secondary to tuberculosis of the lungs or other organs, the dangers mentioned are added to those of the already serious primary affection.

In rare instances the genital process may undergo conservative fibroid change, and it is possible that in some cases the deposit of calcareous material may lead to healing; but it must be admitted that these conservative processes occur but rarely, and that the usual course of the disease is one of progressive advancement.

**TREATMENT.**—In view of the possibility of infection from without, the necessity for prophylactic measures becomes apparent. They are especially indicated when there is any suspicion of genital tuberculosis on the part of the husband, when the dangers attending coitus should be pointed out, and abstinence recommended.

Of course, the treatment varies as different portions of the genital tract are involved, and as the disease is primary or secondary. It is also greatly influenced by the general condition of the patient, and by the various complications that individual cases may present.

Tuberculous ulcerations of the vagina and vulva are usually secondary to tuberculosis elsewhere. In a considerable number of cases the application of irritants, as tincture of iodine, iodoform, or lactic acid, is frequently followed by a total disappearance of the ulcerations; but, unfortunately, these have a marked tendency to recur, so that the effect is usually only temporary; still, in a few instances the use of such agents leads to permanent disappearance of ulceration. If the ulceration is isolated, as is sometimes the case, and resists the palliative methods of treatment, the diseased area should be excised, and the edges of the wound brought together by sutures.

If a tuberculous ulceration of the cervix be recognized, and fail to respond to conservative treatment, we should not hesitate to amputate the cervix,

if we can feel reasonably sure that the rest of the uterus is not affected.

If we hope to deal with tuberculous endometritis, we should first satisfy ourselves that the tubes and ovaries are not involved; any inflammatory disease of the tubes, associated with tuberculosis of the uterus, would indicate that they are likewise involved.

If the process be limited to the uterus, we should at once thoroughly curette it and then introduce iodoform into the cavity of the uterus. If, after this, there is any recurrence of the affection, there should be no hesitation as to the propriety of vaginal extirpation of the uterus, removing the tubes and ovaries at the same time.

On account of the difficulty of diagnosis, one rarely has to face the question of removal of the tubes and ovaries when the seat of primary tuberculosis, excepting when celiotomy has been undertaken for some other indication, when their condition becomes a matter of surprise. Of course, in these cases there can be no question as to the propriety of their removal.

In secondary cases associated with pulmonary or peritoneal tuberculosis, the removal of the tubes is entirely dependent upon the general condition of the patient. In advanced cases of pulmonary tuberculosis there should be no thought of operating; but in the early stages of the disease, an operation may be attempted as long as there is any prospect of permanent recovery from the primary affection.

In cases associated with tuberculous peritonitis, we should not hesitate to remove the tubes and ovaries if possible, unless the general condition of the patient is particularly unsatisfactory (advanced pulmonary tuberculosis); for we should bear in mind the curative influence that celiotomy frequently exerts in tuberculous peritonitis and the possibility of the affection having originated in the tubes.

## CLINICAL MEMORANDUM.

### RESECTION OF BOTH ULNAR BONES, WITH AN EXPERIMENT IN BONE-GRAFTING.

BY JAMES KENNEDY, M.D.,  
OF SAN ANTONIO, TEXAS.

A WOMAN, about twenty-eight years old, who gave a history of rheumatism in both forearms for a period of two years or more, came to see me about one year ago, complaining of rheumatic pains at and below both elbow-joints. At about the middle of either forearm, at its posterior and lateral aspects, was situated a tumor which I diagnosticated periosteal, and although no syphilitic history could be obtained, the epitrochlear and sub-occipital glands were enlarged and indurated. The tumors sensibly diminished in size under the influence of mercuric chloride and potassium iodide, in large doses; hence it is reasonable to conclude that they were of syphilitic origin.

When the patient came to consult me the second time (one year after the first consultation) she presented both arms for inspection, and over the middle of each tumor was a large, circular ulcer, with sloughing edges, discharging pus in small quantities.

The woman stated that a small sore had made its appearance on each arm, and that the physician to whom she had gone, after having given up the treatment that I prescribed for her, had told her that it would be necessary to scrape the sore, and under the influence of chloroform had done some kind of an operation which had increased the pain and enlarged the sores without any benefit arising therefrom.

I again placed her upon mercuric chloride, gr.  $\frac{1}{4}$ , and potassium iodide, gr. lx, three times daily, and again had the satisfaction of seeing the tumors reduce in size. Suppuration still continued, although in diminished amount; detachment of the sloughs had exposed dead bone.

I advised an operation for the removal of the necrosed bone, to which the woman consented. I cut down upon the left ulna and found it dead throughout its entire circumference for a distance of about three and three-fourths inches and made a resection of this length. Having dressed the arm antiseptically, and applied an anterior splint, I concluded to defer operation upon the right until such time as the patient would have recovered some use of the arm upon which I had just operated, and would then not be entirely helpless.

FIG. 1.



Left arm. Representing section removed.

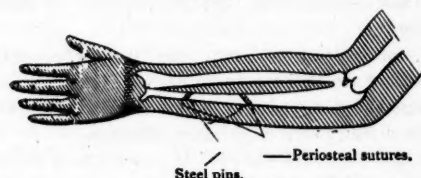
It occurred to me that if I could successfully graft a section of bone so as to fill the gap, or rather to establish continuity of bone-structure, the patient might recover perfect use of her arm. Feeling that the possibilities in view were such as to warrant the use of any means that could in any way contribute toward the desired end, I submitted to her my proposition to try the experiment, telling her, however, that it was an experiment, and one that had not proved successful in any case of which I knew. I explained that in my opinion the only ill-result of failure would be a delay of perhaps a week's time in recovery. The difficulty that now presented itself was in the selection of a method. Not having the patient in a hospital where I might have at my disposal a corps of trained nurses and assistants, it was very clear that I could not repeat the experiment of Phelps, the details of which required for the performance facilities that were not at my command.

The method upon which I finally determined was to make a vivisection from the foreleg of a goat and graft it upon the segments of bone remaining in the patient's forearm, which I proceeded to do in the following manner: A full medium-sized goat in prime condition was obtained, and, after having been thoroughly scoured and drenched with antiseptics, the right foreleg was shaved and the soft parts rapidly dissected away from the bone,

leaving only the periosteal covering. The periosteum was afterward dissected in such a way as to leave flaps of a half-inch or more at either extremity of the section, which was so made as to be of the same length, and its surfaces so directed as to correspond with the necrosed section that had been removed. While this section was being prepared the patient was anesthetized and the wound prepared for the reception of the graft.

The wound was washed, the extremities of the bone freshened by scraping, and the periosteum dissected up for a distance of a quarter of an inch. The graft was now introduced, the surfaces accurately approximated, and the section fastened by the insertion of steel pins in the manner shown in the cut. The periosteum of the

FIG. 2.



Left arm. Representing graft in place with steel pins and periosteal sutures.

graft was stitched to the periosteum of the excised extremities of the patient's bone by means of silkworm-gut, and the edges of the wound in the soft parts approximated by means of silk sutures, thus closing in the section.

The limb was dressed, splinted, and left for one week. During this time the patient's temperature fluctuated between  $100^{\circ}$  and  $101^{\circ}$  F.

The dressing was removed at the end of a week, when it was found that the graft had not united to the bone and the wound was full of pus.

The medullary canal of the transplanted section was full of foul-smelling pus, and its periosteum had entirely disappeared. The cut extremities of the patient's bone were covered with healthy granulations, which were, however, most numerous near the medullary portion. The graft was removed and the wound allowed to heal by granulation.

The patient has a useful arm, although naturally much weaker than it was before the advent of the disease-process. The woman can execute all of the movements ordinarily performed in health, and experiences only a slight hindrance to the movements of pronation and supination.

FIG. 3.



Representing right arm with section removed.

At the end of the sixth week the patient had so far recovered the use of her left arm as to enable her to feed herself; so I concluded to operate upon the other arm without further delay. On cutting down upon the ulna of this arm I found that the necrotic process had involved



about four-fifths of its circumference. The portion uninvolved was along the interosseous border. The character of the section made is shown in Fig. 3. It was difficult to make, on account of the danger of cutting through or breaking the thin sliver of bone with which I designed to perpetuate the continuity of structure.

The arm was dressed in the manner already described in the operation on the other arm.

A feature worthy of remark here is the comparatively slight disability which the patient suffered from this operation. She would not have the arm remain in a splint or sling after the second day, but insisted on using it to wait upon herself.

Both arms have now healed entirely, and the patient is able to do housework; she says that she suffers no inconvenience at all from the right arm, which is the one in which a sliver of bone was left connecting the fragments to perpetuate continuity of structure, but suffers a little from pain in her left arm whenever she attempts to lift anything heavy. This pain seems to be occasioned by the pressure of the outer edges of the fragments on the soft parts when a strain is thrown upon the arm. It is probable that when the cicatricial plug that fills up the gap and connects the fragments becomes more firmly organized this trouble will disappear.

Of course, it is not reasonable to suppose that the patient will ever have as much strength in the arm from which a section through the entire thickness of the ulna was taken, because the gap is filled and continuity is established by a plug of material less firm and unyielding than healthy bone, and is not capable of transmitting the force of muscular contraction or offering the resistance so necessary to leverage. Of necessity a great strain is thrown upon the interosseous, oblique, and radio-ulnar ligaments, and the pronator and supinators of the forearm whenever the patient attempts to lift any heavy weight.

With the right arm, however, the case is somewhat different. It is possible that in the course of time the block of bone removed by the operation may be entirely replaced by growth of the thin strip which perpetuates the continuity of bone in the ulna of that arm. Even now the woman has such perfect use of the arm and so much strength in it that she believes it is as strong as it ever was.

The lesson which this experience seems to teach is the advisability of perpetuating continuity of bone-structure whenever possible, no matter if the connecting sliver of bone is thin, so long as it is alive and healthy.

Valuable assistance was rendered me in these operations by Drs. Russell Caffery and Henry J. Trolinger, to both of whom I take this opportunity to extend my thanks.

## MEDICAL PROGRESS.

*The Recent Cholera in New York.*—DR. BIGGS, Chief Inspector of the Division of Pathology, Bacteriology, and Disinfection of the Health Department of the City of New York, has prepared a report of the pathologic and bacteriologic work performed during the recent outbreak of cholera in that city. Attention is called to the impossibility of positive differentiation between cholera morbus and Asiatic cholera from the clinical features

alone, and complementary importance is laid upon bacteriologic study. The history of the discovery of the cholera-spirillum is succinctly given.

In the recent outbreak the first case investigated was that of a man, thirty-two years old, who died after an illness of about thirty-six hours' duration, having suffered with severe watery diarrhea and vomiting, accompanied by persistent cramps in the abdomen and legs, followed by collapse and death. The case was reported to the Health Department as probably one of Asiatic cholera. The post-mortem examination, however, disclosed no distinctive lesions, and, in the absence of evidence of exposure to infection by Asiatic cholera, and in the failure of the microscopic examination to demonstrate the presence of cholera-spirilla, a provisional report was made that the case was one of cholera morbus. A biologic study was, however, at once instituted, and in the course of a few days it became evident that the case was one of Asiatic cholera. The identity of the organisms found was confirmed by eminent authority. During the month following the occurrence of this first case a diagnosis of Asiatic cholera was made in nine cases in New York City and in one case in New Brunswick, N. J., either from the biologic examination or, in two or three cases in which no biologic examination was made, from the clinical history and a knowledge of association with cholera-patients. Of the eleven cases of Asiatic cholera, nine terminated fatally. Of some twenty-four suspicious cases in which biologic examination failed to demonstrate the presence of cholera-bacilli recovery ensued in all. In all of the cases of Asiatic cholera the clinical history was practically the same: vomiting, watery diarrhea, cramps in the abdomen and legs, collapse. The illness lasted from six or eight to thirty-six hours, and in one instance for five days. In most of the cases that proved to be instances of Asiatic cholera the intestinal contents were examined after death. In one case the intestinal discharges were examined shortly before death, and in the suspicious cases (which proved to be instances of cholera morbus) the intestinal discharges were examined. In one or two instances soiled clothing was examined. The results in all of the cases of Asiatic cholera were identical, the cholera-spirillum being constantly found. The post-mortem appearances and the anatomic lesions were the same in all of the cases, and so striking and so unusual as to constitute strong though insufficient ground for a diagnosis. The face was drawn and had a peculiar expression; the cheeks and eyes were much sunken; the malar bones were exceedingly prominent; the extremities of the nose, fingers, and toes were shrivelled and often cyanosed; the extremities were semi-flexed; rigor mortis was pronounced; and in some instances the temperature remained high for several hours after death. On opening the abdomen the intestines presented a peculiar rosy tint, which was especially marked in the ileum. The small intestines were, as a rule, distended with fluid. All of the parenchymatous organs appeared congested, and presented a condition of cloudy swelling. The brain and its membranes were also congested. The blood everywhere was fluid, or showed but a few dark, soft clots. The mucous membrane of the stomach and intestines presented few changes apparent to the naked eye, excepting marked prominence and swelling of

Peyer's patches and the solitary follicles in the lower part of the ileum. In all cases the intestinal contents were notable for an absence of biliary coloring matter or ordinary fecal matter. They were usually large in amount, of gruel-like consistency, and slightly pinkish hue. The sediment that formed on standing was found to be largely made up of desquamated epithelial cells, mucus, microorganisms, and granular detritus. The bladder was usually empty. In a few cases there was a peculiar dryness of all of the organs.

**Pubeotomy.**—ZWEIFEL (*Centralblatt für Gynäkol.*, 1892, No. 44, p. 857) has reported the case of a woman, thirty-seven years old, married ten years, who had borne seven children at term, six of which were delivered by version and one with the aid of the forceps. There was only one living child, which was born spontaneously in the eighth month. The others were all stillborn. The woman greatly desired to have a child and was willing to submit to any necessary procedure. She came under observation after pains had been present for two days. The normal period of pregnancy had elapsed. The amnion had ruptured thirty-six hours previously; the os uteri was as large as the palm of a hand; the lips of the cervix hung relaxed in the vagina. The child was in the left occipito-anterior position, and was of moderate size. The head was high and mobile above the pelvic strait; the sagittal suture was transverse. The mother's pelvis was a flat rachitic. The distance between the anterior superior iliac spines was 10 inches; that between the crests, 10.78 inches; that between the trochanters of the femur, 11.93; the external conjugate was 6.55; the diagonal conjugate, 3.85 inches. The patient was 59.29 inches tall and presented other evidences of rachitis. Under the circumstances it was determined to perform pubeotomy. Not until the ligamentum arcuatum was severed, however, was it possible to deliver the child, even with the aid of the traction-forceps, a separation of 2.5 inches occurring. The section of the symphysis pubis occupied fifteen minutes; the extraction of the child, five hours and twenty-eight minutes. The child was a female; it weighed 7 pounds, and measured 20 inches in length; the other measurements were as follows: occipito-frontal diameter, 4.62; bi-parietal, 3.08 (?); bi-temporal, 3.66 (?); occipito-mental, 4.91; occipito-frontal circumference, 13.86; the sub-occipito-frontal circumference, 13.28; the bis-acromial diameter, 5; the bis-acromial circumference, 14.63; the thoracic diameter, 3.47; the thoracic circumference, 12.13; the bis-trochanteric diameter, 3.47; and the bis-trochanteric circumference, 11.17. The child died after two days, of pneumonia. On the seventeenth day post-partum, the first attempt to walk was attended with pain, but on the nineteenth day this difficulty had disappeared, and on the twenty-first day the patient was presented to the Obstetrical Society of Leipzig. Zweifel calls attention to the danger of a possible rupture of the sacro-iliac articulations, and records the case of a woman with a simple flat pelvis in which in the birth of a large child both the symphysis pubis and the two sacro-iliac articulations were ruptured.

**Immunity to Cholera Conferred by the Milk of Protected Animals.**—KETSCHER (*Compt. rend. hebdom. des Séances de la Soc. de Biol.*, 1892, No. 32, p. 832) has succeeded

in conferring upon guinea-pigs immunity to cholera by previous treatment with the milk of protected animals. A fatal result was likewise averted when inoculation was shortly followed by treatment with the protective milk.

## THERAPEUTIC NOTES.

**Oil of Camphor Subcutaneously for Pulmonary Tuberculosis.**—At a recent meeting of the Berlin Medical Society ALEXANDER (*Münchener med. Wochenschr.*, 1892, No. 47, p. 844) related that he had employed oil of camphor subcutaneously for three years in the treatment of pulmonary tuberculosis. The results were to be found in increased motor power, a strengthening of the action of the heart, improved digestion, diminution of suppuration, antihydrosis, antipyresis, and hypnosis. As the action of the oil proved to be cumulative, an injection of fifteen minims was practised on each of four consecutive days, followed by an interval of a week. In febrile pulmonary cases only a minim and a half were injected; in febrile laryngeal cases, however, fifteen minims. In the latter cases local treatment with equal parts of oil of camphor and olive oil proved useful. The treatment seemed best suited for advanced cases.

### For Pertussis.—

R.—Resorcin. . . . . gr. v.  
Antipyrin. . . . . gr. xv.  
Aquaæ menth. piper. . . . . f3j.  
Aquaæ destillat. . . . . f3j.—M.

KRAISMANN, *Therap. Monatsh.*

### For the Ephelides of Pregnancy.—

R.—Zinci oxidi pur. . . . . gr. v.  
Hydrarg. oxid. flav. . . . . gr. xx.  
Otto rosæ . . . . . gtt. x.  
Ol. ricini } . . . . . aa ʒijss.—M.  
Ol. theobromæ }

Ft. unguent.

S.—Apply topically with gentle friction twice daily.  
*L'Union Méd.*, No. 137.

### For Chapped Hands.—

R.—Menthol. . . . . gr. iij.  
Salol. . . . . gr. vj.  
Ol. olivæ . . . . . ʒj.  
Lanolin. . . . . ʒiij.—M.

Ft. unguent.

S.—Apply topically once or twice daily.  
*L'Union Méd.*, No. 133.

### For Balanitis.—

R.—Atropinæ sulphat. neutral. . . . . gr. j.  
Zinci sulphat. . . . . gr. ij.  
Acid. boric. . . . . gr. iv.  
Aquaæ destil. . . . . f3j.—M.

S.—Apply topically twice or thrice a day by means of a brush. If the balanitis is complicated by phimosis, a small quantity of the solution is injected between the glans and the prepuce.

CHICHESTER, *L'Union Méd.*, No. 135.

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SATURDAY, DECEMBER 24, 1892.

## NATIONAL QUARANTINE.

DURING the last four or five months there have been published a goodly number of papers, addresses, letters, and editorials upon the subject of a National Quarantine, and, so far as we have seen, all of these, whether in the medical or the lay press, agree that such a quarantine is desirable in the interests of public health, of travellers, and of commerce. This is, however, by no means the first time that the desirability of a National and uniform system of maritime inspection has been very generally agreed upon, and urged upon Congress in various ways. Why, then, has it not been authorized and established? The answer to this question involves a statement, not only of the objections which have been publicly made to the establishment of such a system, and which will be made again if the matter comes before Congress, but also of the real, practical difficulties which have, heretofore, either prevented or made futile several attempts to provide a really National quarantine.

The objections publicly made to it are that it is unconstitutional in that it would interfere with one of the police powers of the States, specially reserved to them in the Constitution of the United States. The argument is that the material interests of the communities of a State, and therefore of the State

itself, are so deeply involved in the prevention of epidemics, and in the methods employed for such prevention, that the State should in all cases control the appointment of, and be able to hold directly responsible, those employed in the quarantine service of or for the State.

It is demanded by those holding these opinions, not only that the States shall retain the right granted them by the Constitution to proclaim and enforce such quarantine regulations, in addition to those made by National authority, as they see fit, but also that the proclamation and administration of quarantines should in all cases be reserved to State or municipal authorities on the ground that only local experts can properly decide as to what is to be done or how to do it. They say that it is advisable that the General Government should aid the States with money, and in other ways, to establish and maintain quarantines, but that the power of the General Government to control the times and methods of such service should be limited to the withholding of aid in case the local regulations are not approved.

Everyone admits that Congress, by virtue of its power to regulate commerce, can establish and control quarantines against foreign countries, but if any State can set up and maintain a second or local quarantine within or behind the general one, and refuse to allow persons, baggage, or goods to pass these local barriers, although they have passed those set up by the United States, then the authority of the United States is made practically *nil*, and it cannot be expected that commerce will submit to the double delays and hindrances that must thus arise.

To have a really useful National quarantine, State and local quarantines must be given up.

The States may do this by mutual agreement with each other and with the United States precisely as New Jersey has agreed to let New York control the quarantine for the Jersey coast bordering on New York Bay and harbor, and this is probably the most immediately practical method of overcoming this particular difficulty.

No doubt some States would, at first, refuse to accede to such an agreement. This would mean that a number of men in that State, mostly officials, would desire to keep in their own hands the power and the pay derivable from quarantine, and that they would be able to persuade the legislative and executive authorities of the State that they were more competent and more to be trusted than the



United States officials. This state of affairs might perhaps last a year or two, but not longer, for the United States, in conjunction with the concurring States and the great commercial interests involved, would be able to exert an influence which would overcome that due to personal and pecuniary considerations on the part of a few dozen individuals.

The real, practical difficulties in the way of establishing a satisfactory quarantine system are much more numerous than the legal and constitutional objections referred to, and taken together, have heretofore proved a formidable obstacle, but no one of them is very strong by itself, and each one can be overcome if taken singly. The first question to be settled is whether we want a National health-organization or only a National quarantine. Either may exist without the other, although the first is generally supposed to include the second, and sanitarians, physicians, politicians, and jurists are divided in their opinions as to whether both or only one, and if the latter, which one, is most expedient and desirable at the present time. This question, with others connected with proposed legislation on the subject, we will consider hereafter.

#### ANTICHOLERIN.

It is impossible to view the work that is going on about us and not be inspired with the hope that the not distant future may see us provided with the specific means for the treatment of the various infectious diseases. The foundations for this magnificent structure seem already to have been laid. Among a number of others, KLEBS has added a valuable increment to our knowledge upon this interesting and important subject. He considers as the expression of a great natural law the fact that, as a result of tissue-metamorphosis, there are produced in all living organisms certain substances which, retained, give rise to toxic symptoms, while certain others are endowed with the faculty of shielding the organism from various deleterious influences. The first group of substances KLEBS designates *autotoxines*; the second, *allotoxines*. Applying this law to the biology of the pathogenic microorganisms, he has endeavored to separate these two groups of substances, so opposed in action, so as to be able to utilize therapeutically those that are inimical to the life of the microbe.

Following out this line of thought, KLEBS prepared from the tuberculin of KOCH a purified product to which he gave the name *tuberculocidin* (see THE

MEDICAL NEWS, April 16, 1892, p. 441). Pursuing the subject further and applying the principle to the treatment of cholera, this industrious investigator, with almost the precision that characterizes a definite chemical reaction, has succeeded in separating from cultures of cholera bacilli a product to which he gives the name of *anticholerin*, and traverses the successive steps necessary to demonstrate the harmlessness as well as the curative virtues of the agent.

Anticholerin is obtained by filtering sterilized cultures of the cholera-bacilli and concentrating the filtrate over a water-bath; from this residue the allotoxines, which would be injurious to the animal organism, are precipitated by means of absolute alcohol; the autotoxines, to which the bactericidal, curative, and immunifying properties are ascribed, remaining in solution. It was successively shown that these latter substances are capable of preventing the development of cholera-organisms upon agar and gelatin with which they were mixed, as well as of checking the growth of the same organisms in cultures to which anticholerin was added. It was next demonstrated that anticholerin is not toxic to guinea-pigs, and subsequently the same fact was demonstrated with regard to man. It was further shown that guinea-pigs subjected to a preliminary treatment with the anticholerin are proof against cholera-infection. The fluid that collected in the abdominal cavities of unprepared animals inoculated with cholera-bacilli proved capable of affording protection to other animals. A favorable influence was also exercised upon inoculated animals by treatment with anticholerin.

It yet remained to verify in man the results reached in the lower animals. This part of the research was carried out at the Neues Allgemeine Krankenhaus at Hamburg, and the results are published by MANCHOT (*Deutsche med. Wochenschr.*, 1892, No. 46, p. 1050). Thirty-one cases of cholera of the severer types were treated with anticholerin, with twenty-one deaths—a mortality of 67.7 per cent. Of one hundred and three cases of the same kind treated with saline infusions eighty-seven died—a mortality of 84.5 per cent. The number of cases treated, it is true, is too small to permit of definite conclusions, but from all the circumstances there seems ground for believing that anticholerin possesses positive therapeutic virtues. The remedy was injected subcutaneously in doses of one c.cm.: on the first day repeated six or seven times; on the second day five or six times; on the third day three

times; on the fourth day once or twice. The frequency of injection was governed by the depression of the temperature, upon which anticholerin exercised a favorable influence, being usually followed by febrile reaction. Other measures may advantageously be conjoined with the employment of anticholerin. Enteroclysis, hypodermatoclysis, venous infusion, stimulation, and artificial heat each has its place, and is not to be omitted under the circumstances to which it is appropriate.

#### A STATE BOARD OF MEDICAL EXAMINERS FOR PENNSYLVANIA.

THE legislative committee having the proposed bill in charge have issued a pamphlet designed to further the passage of the bill by citation of a most convincing array of authorities, facts, and testimonials. There can be no possible question as to the power of the State to regulate and define the rights of those into whose hands the health of her citizens is placed.

That even the Cherokee and Choctaw Nations (Indian Territory) have such a law is a striking commentary upon the efforts of a few to oppose the movement in the State of Pennsylvania. It seems that we are to be about the twenty-fifth of our belated States to pass such a law—for pass it certainly will! In such a cause, although "better late than never," how preferable would have been "better never late!"

In view of the facts that there are in Pennsylvania some 932 undiplomaed quacks at their nefarious work, and that there are also some 222 more with bought diplomas from bogus colleges, it would seem that a bill so uncriticisable as is the proposed one, could only command the cordial support of all right-minded people.

When in the unendowed college all the tuition-fees pass directly from the student's pocket to the professorial pocket, and when the greater the number of students and graduates the greater the professorial income, the only thing that prevents the degradation of medical colleges and that keeps them from being diploma-mills, frank or hypocritical, is the moral character of the professorial person. And, as we all well know, the professorial character may by no means be safely subjected to any great strain in these days of politics and finance. Hence the excellent wisdom of the committee in placing as the first of its testimonials that of

PRESIDENT ELIOT, who always sees clearly and truly the *fons et origo mali*:

"IT IS A CLEAR DISADVANTAGE IN MEDICAL COLLEGE EDUCATION THAT THE DEGREE GIVEN BY A FACULTY, A TEACHING FACULTY, SHOULD ADMIT TO THE PROFESSION. THE STANDARD SHOULD ALWAYS BE OUTSIDE, DETERMINED BY ANOTHER POWER."

#### OTOSCLERONECTOMY IN CHRONIC AURAL CATARRH.

OTOSCLERONECTOMY (*οὖς, ὠτός*, ear; *σκληρός*, hard; *ἐκτομή*, excision) is a new coinage designed to express the surgical removal of part or all of the sclerosed and ankylosed conductors of sound in chronic catarrhal otitis media. As this operation has for its object the relief of tinnitus, deafness, and aural vertigo, more interest surrounds it than environs "otonecrotomy," or the excision and removal of the necrotic conductors of sound in chronic purulent otitis media. This interest is due to the fact that there are more cases of chronic catarrhal deafness than of chronic purulent otitis media seeking relief, and also because "otonecrotomy" is but following out an ordinary surgical indication, and requires no discussion.

Though the earliest attempts at "otoscleronecrotomy" were made in Europe, the elaboration and signally good results of this operation are due to the acumen, industry, and boldness of American aurists displayed within the past decade. The great advance in aural surgery is the direct outcome of the enthusiastic and patient labor of a few men devoted solely to otology, untrammelled by any other special work. The pioneer work in this field of surgery, performed by SEXTON, of New York, and BURNETT, of Philadelphia, has led naturally to the recent modified operation of JACK, of Boston, viz., the removal of the stapes only.

These operations have proved beyond all cavil that the sound-conductors, namely, the membrana tympani and the three ossicles, can be removed, not only without any bad results to the patient, but with benefit to all the symptoms of chronic aural catarrh. Judging by past experience, the relief to deafness, tinnitus aurium, and aural vertigo is permanent, with the exception, perhaps, of a very small number of cases in which the indications were obscure—an incident common to all surgical procedures.

From the experiments of SIR ASTLEY COOPER down, it has been observed that generally the good

effects obtained by excision of part or of all of the membrana were lost, so far as *hearing* is concerned, by the reproduction of the drum-head. What changes of opinion in this regard may be brought about by the removal of the incus and stapes, or the stapes only, the membrana being allowed to remain *in situ*, it is not yet known. Good results, however, have attended all of these modifications of otosclerectomy.

The importance of any harmless operation that can be applied with reasonable assurance of relief in these hitherto hopeless cases of chronic catarrhal deafness, noises in the ear, and ear-vertigo, cannot be overestimated.

#### COMMENDABLE CHANGES IN THE SPELLING OF CHEMICAL WORDS.

THE *Dental Cosmos* informs us that after four years of correspondence and discussion, the Committee of the Chemical Section of the American Association for the Advancement of Science has adopted the following changes in spelling and pronunciation: The final *e* is dropped from all words terminating in *ide*, and the syllable pronounced *-id* (as chlorid, iodid, hydrid, oxid, hydroxid, amid, anilid, murexid). The final *e* is also dropped from the names of all elements and compounds which formerly terminated in *ine* (except doubly unsaturated hydrocarbons), and the syllable pronounced *-in* (as chlorin, bromin, etc., amin, anilin, morphin, quin, vanillin, alloxatin, absinthin, emulsin, caffein, cocain). The spelling aluminium is authorized instead of aluminum, and *f* is used instead of *ph* in the spelling of sulphur and its derivatives (as sulfur, sulfid, sulfite, sulfate, sulfo-, etc. This change in the spelling of sulphur, though it is radical, is simply a return to the original form of its spelling, is in consonance with its spelling in other modern languages, and is in harmony with phonetic requirements. The substitution of *ph* for *f* in this word was a distinctly modern innovation.

The system has been adopted by the editors of *Funk and Wagnall's Standard Dictionary*; also by the *Journal of Analytical and Applied Chemistry*, of Easton, Pa. It is used by PROF. GEO. C. CALDWELL, of Cornell University, and President of the American Chemical Society, in the second edition of his *Elements of Chemical Analysis*; by DR. T. STERRY HUNT in his *Systematic Mineralogy*; and by DR. R. A. WITTHAUS in his *Manual of Chemistry*.

These changes being evidently in the line of con-

servative progress, and sooner or later to be generally adopted, THE MEDICAL NEWS, unless distinctly against its contributors' wishes, will hereafter follow the recommendation of the Committee, except in so far as preserving the terminal "e" that distinguishes alkaloids.

#### WARD-CLASSES AT THE PHILADELPHIA HOSPITAL.

As was intimated in THE NEWS (May 28, 1892, p. 603), the object of the Bureau of Charities in dealing anew with the subject of ward-teaching was not to prevent or restrict the legitimate use of the facilities of the Philadelphia Hospital for medical education, but to prevent illegitimate and unauthorized abuse thereof. The rules governing ward-classes, as now promulgated in the desire to attain the end alluded to, are wise and proper, and will, no doubt, be cordially received and upheld by the Staff. The method pursued by PRESIDENT LAMBERT and his colleagues in obtaining data and advice cannot be too highly commended as an exhibition of that proper courtesy and mutual confidence that ought always to obtain between lay boards of direction and medical officers. All concerned are to be congratulated on the outcome.

#### SELECTION.

##### THE RIGHT AND THE WRONG OF IT.

THE *Practitioner's Monthly* says: "It is not wrong to use a proprietary medicine because the code says so or because some men think so." Quite correct. It is wrong, because it damages both medicine and pharmacy. It is wrong, because it retards progress, sacrifices the good of the mass for the profit of the individual. The code or men's thoughts are of value only as they represent facts.—*The American Lancet*.

#### REVIEWS.

REGIONAL ANATOMY IN ITS RELATION TO MEDICINE AND SURGERY. BY GEORGE MCCLELLAN, M.D., Lecturer on Descriptive and Regional Anatomy at the Pennsylvania School of Anatomy; Professor of Anatomy at the Pennsylvania Academy of the Fine Arts, etc. Illustrated from photographs taken by the author of his own dissections, expressly designed and prepared for this work, and colored by him after nature. In two volumes. Vol. II. Philadelphia: J. B. Lippincott Co., 1892.

In the first volume the regions of the head, neck, upper limbs, and thorax were treated, and this volume completes the work by including the remainder of the



body. The impressions which we received from a careful examination of the first half of the treatise are confirmed by the study of the concluding portion. The descriptions are in the main accurate and well-phrased; excellent discretion is displayed in the selection of topics to be dwelt upon and of matters to be passed over cursorily; an eminently practical aspect is given to the subject by frequent reference to the applications of anatomic knowledge to the every-day needs of the practitioner; and the plates are instructive and artistic.

In view of so much that is admirable, we hesitate about uttering a word of adverse criticism. But there are a few blemishes of so conspicuous a character as to demand mention, if for no other reason than that they may be corrected in the future editions to which the merits of the work entitle it. The author follows almost all of the books in describing the liver as it appears when removed from the body and laid upon a flat surface. Naturally it sags by its own weight, and the under and back surfaces merge into one, which one is called inferior, even though the vena cava is thus made to run a horizontal course. Three and a half centuries ago the father of modern anatomy described and figured the posterior surface; but to-day only a small minority of the text-books betray any knowledge of its rediscovery in recent years. The pancreas suffers in representation for a similar reason. On the whole, the plates of the viscera seem to us to be less satisfactory than those of other parts.

We took exception to the coloring of the plates in the first volume as not being natural; we object to the hues in some of the pictures in this volume as being too faithful to certain natural conditions. The surgeon is aided by such tinting as represents the normal color in life; and the dissector is not always doomed to labor over a corpse far gone in putrefaction. Consequently, it is not merely the esthetic observer who justly complains of a picture the sight of which recalls the mephitic atmosphere of an ill-kept dissecting-room. It is doubtless difficult to portray the normal appearance of the peritoneum; but surely it is not green in health.

We are surprised at the author's use of the term "general anatomy" to cover a description of the shape, dimensions, and relations of an organ, instead of its minute structure. The latter employment requires explanation to the uninitiated; but is universal among authors, from Bichat to the present time.

The boundaries of the abdominal regions as given by Dr. McClellan may be adopted ultimately by the anatomic world, but they are certainly unusual.

The work is a good demonstration of the fact that no one method of teaching, and especially of illustrating, can meet all of the requirements of the student. Photography in many cases is unquestionably superior to pencil-drawing; but there are not a few instances in which the latter is the better from its capability of aiding the imagination by emphasizing features which are left in obscurity by the sun-picture. Generally, a faithful pictorial representation of an object is preferable to a diagram; but often the latter is an absolute essential to the beginner. We do not wish to be understood as commending the method of a certain American text-book, the only originality of which is a delirium of

diagrams; but we do believe that the occasional employment of schematic and line drawings is indispensable to complete presentation. Furthermore, microscopic anatomy is nothing but a weariness of spirit when taught (or, rather, undertaken) only by verbal description, as in this work. The value of the usual text-book would be greatly enhanced by the adoption of some of the methods of our author; and the converse is equally true.

In conclusion, while, for various reasons besides its cost, we cannot expect this treatise to become a popular manual for the recitation-room or the laboratory, we predict that its many attractive features and sterling qualities will speedily make it a favorite with practitioners who have the laudable ambition to refresh their anatomic knowledge; and we trust that both author and publisher will be amply repaid for the vast labor and expense involved in the production of this great work.

A TEXT-BOOK OF MORBID HISTOLOGY FOR STUDENTS AND PRACTITIONERS. By RUBY BOYCE, M.B., M.R.C.S. New York: D. Appleton & Co., 1892.

THE plan upon which this work is written is that followed by Professor Victor Horsley in his teaching at the University Hospital, London, and receives his indorsement in an introductory chapter to the present book. This plan is the one usually adopted in laboratory courses in pathology, and finds its fundamental principle in the critical study of the various pathologic processes as seen in different organs, and then the several changes observed in the separate organs and tissues. We are certainly in greater need of a good book of this kind, than of such as deal with the systematic or theoretic teaching of pathology.

Such a laboratory or practical treatise will require, first of all, illustrations of the highest order of merit, and a glance at the 130 colored plates of the book before us is convincing proof that its author fully appreciates the need. With one exception these plates are colored reproductions of micro-photographs, and doubtless are excellent from the artistic standpoint; but as illustrative plates intended to elucidate the text of a work on histology, they seem to us to fail utterly. Many of them are entirely worthless, the majority are indistinct, and very few of the character to be expected. It is significant that the one plate selected by the reviewer as thoroughly good proved, on subsequent examination, to be the one illustration of the book not a micro-photograph. This book is but an additional instance showing the uselessness of micro-photographs as illustrations. Well-drawn diagrams in black and white would have been much better.

Of the text itself, we may say in general that the statements are accurate and up to recent knowledge. The author has evidently given his subject careful study and presents it clearly and with force. The discussion of tumors is different from that usually presented, but unquestionably constitutes a valuable part of the work.

As offsets to these points there is too little regularity of plan in the study of different pathologic processes or of different organs; so that certain parts attain an undue prominence at the expense of general harmony. It is noticeable, too, that the chapter on methods of pre-

paring, cutting, and staining tissues, is too brief to be of any use to a student and too elementary to serve the purpose of an advanced reader. In its present form this chapter is detrimental to the value of the book.

Altogether, we cannot but regard the book as disappointing, and regret that a work in whose preparation so much labor and money have been expended should not merit more pronounced commendation.

**ACNE AND ALOPECIA.** By L. DUNCAN BULKLEY, M.D., Professor of Diseases of the Skin in the New York Post-Graduate Medical School; Physician to the New York Skin and Cancer Hospital. Pp. 79. Detroit: Geo. S. Davis, 1892.

THIS brochure, the latest addition to the Physicians' Leisure Library series, is from the pen of one of our best-known dermatologists. The information given may be relied upon as being accurate and trustworthy. But the cure of acne, even in the hands of the experienced specialist, is in many cases by no means an easy task. Relief is one thing and cure another, in dealing with this disease.

The cause of acne, according to the author, is often found to be due to a lowered state of the system; to digestive derangements; and to local irritation. In the treatment, diet and hygiene; constitutional and specific medication; and local applications are all required to bring about a cure. We entirely agree with Dr. Bulkley in the statement that "arsenic is of very little value in acne." Local treatment is dwelt upon, and much excellent advice and many good formulas are given. The article throughout is plainly written, and is from the standpoint of general medicine, especially as to cause and treatment.

The chapter on Alopecia is likewise admirable, as might be expected from so eminent and practical a teacher. We must, however, adversely criticise the formulæ at the close of the book; the prescriptions found here should have been placed rather in the text, and we should have been told, moreover, just when to use them, upon which knowledge success in treatment mainly depends. It is high time these old-fashioned formulæ were abolished. They are, perhaps, more dangerous than useful to the general practitioner. We commend the volume heartily to all those interested in the subject.

**COLOTOMY—INGUINAL, LUMBAR, AND TRANSVERSE—FOR CANCER OR STRICTURE WITH ULCERATION OF THE LARGE INTESTINE.** By HERBERT W. ALLINGHAM, F.R.C.S., Surgeon to the Great Northern Hospital; Assistant Surgeon to St. Mark's Hospital for Diseases of the Rectum; Surgical Registrar to St. George's Hospital. Pp. 199, with 33 illustrations. London: Baillière, Tindall & Cox, 1892.

THIS excellent and essentially practical monograph is based upon the author's experience of sixty cases of colotomy. Rarely does a book supply so succinctly and minutely as does the present volume exactly what is desired by the surgeon about to operate. Nowhere else can the mass of information which it contains be found. All possible varieties of colotomy—inguinal, lumbar, and transverse—are described, and the exact indications and contra-indications for each so clearly

delineated, that the choice of operation should, in most cases, be exceedingly easy. The reviewer favors left inguinal colotomy under most circumstances, but admits the advantages of the other varieties under other conditions; the claims and advantages of each are set forth in an unprejudiced and scientific manner, which places many details of this whole class of operations in an entirely new light. The illustrations (all original save one) are admirably clear and satisfactory.

**THE MEDICAL NEWS VISITING LIST FOR 1893.** Philadelphia: Lea Brothers & Co.

A VISITING LIST is a necessity to the even moderately busy practitioner, and the one before us certainly well fulfils the requirements. It is published in four styles: Weekly, dated, for 30 patients per week; monthly, undated, for 120 patients per month, and good for any year; perpetual, undated, for 30 patients weekly per year; and perpetual, undated, for 60 patients weekly per year. It is so arranged that a knowledge of even the rudiments of book-keeping is unnecessary.

The first 32 pages of this book are devoted to subjects of almost daily interest to the physician. Among these may be mentioned sections on examination of the urine, important incompatibles, Sylvester's method of artificial respiration, poisons and antidotes, table of doses arranged both in grains or minims, and grams or cubic centimeters, also an index of diseases with the therapeutic indications, and a chapter on ligation of arteries. The addition of a thumb-index is of advantage. We would suggest that an additional style, weekly, dated, for 60 patients, be added.

WE have received from the Keystone Publishing Co., Philadelphia, *The Physician's Complete Book of Records*, which contains in one volume, of quite convenient size and shape, call list, record of visits, cash accounts, ledger, obstetrical record, death record, and pages for memoranda. This excellent book has been edited and compiled by Dr. Samuel E. Walker. The index is full and comprehensive, and the directions, together with the systematic and lucid arrangement of the various portions of the book, enable the physician to use it with satisfaction and with about the minimum of trouble. It is neatly and substantially bound.

**HISTOLOGY, PATHOLOGY, AND BACTERIOLOGY. A MANUAL FOR STUDENTS AND PRACTITIONERS.** By BENNET S. BEACH, M.D. Philadelphia: Lea Brothers & Co., 1892.

THIS small book contains in its one hundred and fifty odd pages a vast deal of information, and the statements are generally as accurate as might be expected where opinions and explanations cannot be fully detailed. There are certain faults, however, to which attention should be called. The most serious is the attempt to include everything of a special nature at the expense of general considerations. A fair exposition of general principles, with brief mention of special points, would be far better than the reverse, as we have it here. This has led to the heaping together of a great many facts which must certainly prove a hopeless jumble to students and an unsatisfactory exposition for practitioners.

The parts devoted to histology and bacteriology are better than that on pathology. Throughout the book we find minor errors, such as the use of the word "bacteria" when microorganisms, animal or vegetable, are referred to; but on the whole the book is accurate, as it is certainly concise, and will convey the needful information to students if they be able to assimilate such condensed nourishment. A book of this kind should attempt less; it will thereby give more.

## CORRESPONDENCE.

### ACCIDENTS IN INTUBATION.

(A Reply to Dr. Northrup.)

To the Editor of THE MEDICAL NEWS,

SIR: I trust that you will allow me space in your columns to reply to the letter of Dr. Northrup, entitled "Accidents in Intubation," which appeared in THE MEDICAL NEWS, November 26, 1892, p. 615.

This letter was a criticism of an article of mine which appeared in THE MEDICAL NEWS, August 29, 1892, entitled "Intubation *versus* Tracheotomy." In this article I contrasted two groups of cases operated upon at the Boston City Hospital: one group of 327 tracheotomy cases reported by Dr. Munro and myself in 1887,<sup>1</sup> and a second group of 392 intubation cases reported by Drs. Prescott and Goldthwaite in December, 1891.<sup>2</sup> I purposely reported no new cases, merely taking two groups of cases already before the medical public, and contrasting them as any outsider might have done with regard to the comparative merits of intubation and tracheotomy as a life-saving operation. As a result of this comparison I presented the fact that the death-rate of intubation was 9 per cent. higher, and I presented the following conclusion: "That the cause of this increased fatality after intubation in severe diphtheria lies in the imperfect drainage and the limited amount of nourishment that it is possible to give."

I mentioned incidentally, and not by any means as the main issue of my paper, that accidents during and after intubation were more common than during and after tracheotomy, and I quoted from the paper of Drs. Prescott and Goldthwaite to show that in the 392 cases of intubation there were 21 accidents during or immediately after the operation. It is upon this minor issue, and not upon the question of the greater death-rate, that Dr. Northrup attacks my article, and calls upon me "to explain concerning this surprising statement for the instruction of the practising physicians of this country."

Before proceeding to any conclusions which may be drawn with regard to intubation in general from Dr. Northrup's letter, I will reply as far as I can to his criticisms with regard to these accidents.

1. Dr. Northrup is in error if he supposes that during the time when these intubations were done there was a frequent change of house-officers. On the contrary, the house-surgeons at that time changed only once in six months. The cases of diphtheria were in charge of the visiting surgeons of the hospital, six in number, who

served four months of every year, two being on service together. Under each visiting surgeon was a house-surgeon, who served six months. Prior to his becoming a house-surgeon he served in the wards for six months as surgical *interne*, not doing intubations or tracheotomies, but seeing all that were done, and having unlimited practice upon the cadaver; so that when he came to his responsibility as a house-surgeon he had had, so far as can be seen, exceptional opportunities to acquire dexterity in the performance of intubation.

When the visiting surgeon was not present, and the house-officer was obliged to intubate the child in an emergency, it was done under the supervision of one of the executive assistants of the hospital. These were men who had been house-officers, and had, after graduation, passed into the executive department of the hospital. These executive assistants had been able to see every laryngeal operation occurring in the hospital during their service, and for many months afterward. In case of any difficulty arising, the operation was undertaken by these men. I think that this will answer Dr. Northrup's question, "What was their practice in preparation for this serious and not easy operation?"

During the last six months of the five years covered by the intubation cases there was a change in the service at the hospital, and the house-officers were changed oftener; but during these six months very few operations were performed, and the change does not affect the result.

2. "In three cases death occurred during an attempt to insert the tube." These cases were moribund at the time of admission to the hospital. They were in great suffering, and the attempt at intubation was done more with the hope of affording an easy death than with any hope of recovery. The parents were informed beforehand that any operation would probably result fatally, and the operation was not successful and the children died. It should be added, that the operations were *not* done for the purpose of furnishing favorable statistics, and it was manifest, for instance, in cases like these, that any operation would add to the mortality rate. The operations were performed simply for the sake of humanity.

3. Two children died during choking-spells. These are admitted by Dr. Northrup to be unavoidable accidents.

4. In two, insertion of the tube was followed by convulsions. I am sorry to say that I am unable to give any information with regard to these cases without an extended search through the records.

It seems evident to me from the attitude which Dr. Northrup takes that he is not familiar with the severe grade of cases of diphtheria that reach us at the Boston City Hospital. As I have before pointed out, it is the only institution in Boston where these cases are received. Comparatively few operations are performed at the homes of the patients, and the cases that reach us are the most desperate, and often the most hopeless, cases imaginable. If the policy were adopted only in favorable cases the statistics would be better, and many of the accidents of which I have spoken would have been avoided; but every case in which there was any reason to believe that an operation would afford mere temporary relief has been operated upon, and when one

<sup>1</sup> American Journal of the Medical Sciences, July, 1887.

<sup>2</sup> Boston Medical and Surgical Journal, Dec. 31, 1891.



attempts to criticise in the spirit that Dr. Northrup has done, it becomes very easy to point out what seems to be a large fatality. It is one thing to perform intubation in mild cases of beginning dyspnea, and another to do it in desperate cases of advanced diphtheria when death is imminent.

5. In two cases the tube was drawn into the bronchus, and death, of course, resulted. If Dr. Northrup had taken the trouble to refer to the original paper of Drs. Prescott and Goldthwaite, from which I quoted, he would have found these cases reported in detail, and he would have been spared the necessity of making such an extended and misinformed attack upon the operator. Permit me to call attention to one of these cases.

A child, fifteen months old was intubated with a two-year-old tube. The tube was repeatedly coughed up, and then from a three-year-old to four-year-old tube was passed and worn for some days. This again seemed to become loose, and during a quiet night was drawn into the left bronchus. It was evidently a case of paralysis and relaxation of the larynx. The second case was a similar one.

The remarks with regard to these cases merely confirm me in the belief that Dr. Northrup is not familiar with the severe class of cases of which I have been speaking.

6. In two cases the obturator broke. I am enabled to speak of one of them in which a gentle attempt was made by an experienced operator, reputed to be one of the most expert in the city, to introduce a tube. The instrument was, as far as could be seen, a perfect one, but broke near the hinge where the obturator joins the rest of the instrument, and tracheotomy was necessitated. No force whatever was used, and the operation could not have been done more skilfully or more carefully. The instrument was a new one and had never been used before; it came from a New York instrument-maker, and in the box was the card of Dr. O'Dwyer, showing, as I understand it, that the instrument had been examined and approved by him. The instrument was returned to the maker, who found a defect in the steel of which the obturator was made. The accident was a purely unavoidable one, and Dr. Northrup's extravagant language in the matter is wholly out of place.

This, I think, answers the criticism; and with regard to the other case, I am sorry to say I cannot give any detail without an extended search, but so far as I can remember the accident was a similar one.

I have answered in detail, as far as I could, Dr. Northrup's questions, because I was anxious to demonstrate the spirit in which he criticised, and the class of accidents he speaks of as inexcusable. In my paper I did not attempt as a partisan to attack intubation. I merely presented cases, and I might well have allowed the medical profession to draw their own conclusions as to the merits of the two operations.

Dr. Northrup's letter gives me an opportunity to go further, and to say something more with regard to intubation, which I am very glad to have an opportunity to say. In the first place, he avoids the main issue of my paper, viz., that intubation causes a higher death-rate for the reasons that I have given.

If one comes to the discussion of accidents, it seems to me that Dr. Northrup appears curiously and wilfully

ignorant of the fact that accidents are likely to happen to the most experienced operators. Within the last three months I have seen two instances of this. In one, an operator fairly expert in the operation, who had operated in some thirty cases, and who was a man of considerable manual dexterity, utterly failed to place a tube in the larynx of a child with moderate dyspnea. I had an opportunity to examine the case with him after death, and the only explanation that could be found was a long and pendulous epiglottis.

Again, another operator who had performed a large number of intubations, and who had seen and assisted at many others, told me he believed that failures to place a tube were due to clumsiness and a lack of skill; yet within a week of the time that he spoke, in an apparently simple case, he was unable to insert an intubation-tube, and tracheotomy had to be done.

I quote these cases to show that accidents occur when one would least expect them, and I believe Dr. Northrup's assertion "that there need be no such thing as failure of the operation in the case of those who have had plenty of practice on the cadaver," is wholly unwarranted and likely to mislead the profession. There is often much clumsiness in the performance of the operation; there are many failures due wholly to lack of skill; but I beg, Mr. Editor, to call attention to the fact that failure may and does occur to those who have not only extended experience, but perfect self confidence. It is time for these matters to be called to the attention of the general practitioner.

I can hardly believe that Dr. Northrup means what one might infer from his paper—that intubation was only an operation to be undertaken by an intubation-specialist. If this is the case it could, of course, only be done properly and competently by very few men in this country, chiefly in the larger cities. Diphtheritic croup, however, is not limited to the larger cities, and intubation has, it seems to me, been understood as an operation that, under certain restrictions, may be undertaken by the general practitioner.

In the paper that I wrote I considered it as a life-saving measure, and so far as possible drew conclusions as to its general applicability. Dr. Northrup evidently regards it in another light—as an exhibition of skill in the hands of an expert, only to be undertaken by those who are sure of the requisite skill. I, personally, should be unwilling to limit intubation to so narrow a field. It seems to me to be an operation of the greatest worth, and one which is going to play a very important part in the laryngeal surgery of the future. Its place at present is, I believe, almost wholly undetermined, and its value seems to have been very much overestimated by the partisan writings on the subject, which, so far, have constituted the bulk of the literature.

In carefully-selected cases it must have a future of great value, especially in the case of children under two years of age, as I pointed out in my paper. To condemn it as an operation for the general practitioner, as Dr. Northrup does, is, it seems to me, saying too much against intubation. To advocate it as a routine and easy operation for dyspnea in diphtheritic croup, as many writers have done, is, I believe, to place the matter in a false light. The true position of the operation and its future, it seems to me, are to be determined by a

careful and unprejudiced consideration of the results of the experience of different surgeons. I fancy that Dr. Northrup has said more than he meant against intubation, and would be unwilling to stand by the conclusions that one might draw from his paper, viz., that intubation was not to be undertaken except by an expert who had had almost unlimited experience.

In conclusion, I would call the attention of Dr. Northrup to the following paragraph, which occurs at the end of my original paper, and which contains what I have to say upon the subject:

"When, however, an operation shows a recovery percentage of 9 per cent. less than the operation that it is intended to supersede (tracheotomy), in presumably the same class of cases, it becomes time to criticise it, and, if possible, to find the source of the greater fatality. . . . I would suggest that the cause of this increased fatality after intubation in severe diphtheria lies in the imperfect drainage, and the limited amount of nourishment that it is possible to give."

I am, very respectfully yours,

ROBERT W. LOVETT, M.D.

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#### THE METRIC SYSTEM.

To the Editor of THE MEDICAL NEWS,

SIR: It seemed scarcely worth while at the time to notice a reply to my letter on the metric system, which took so limited a view of the subject as that of Dr. Summers, in THE NEWS of November 12th, when it was very certain that a further and more general vindication of the system would be attempted, as has now appeared in your editorial of December 10th, and to which permit me to make the following rejoinder.

It is by no means strange that the metric system should provoke hostility, in view of its extreme intolerance, and of the fact that, not content to let it continue side by side with other and older systems, to win its way as best it could by its own merits, its advocates are continually invoking legislation to their aid in forcing it upon the people, to the entire exclusion of every other system. As long as it maintains this attitude it cannot fail to meet with the most strenuous opposition. Dr. Summers is entirely wrong in his supposition that there is no intention to interfere with the rights of individuals, and to oblige them to write their prescriptions in the metric system. On the contrary, this is just what its friends are striving to accomplish, not only in the matter of prescriptions, but in all other business transactions besides. In your editorial you refer to the circular of the "New Decimal Association," but as its statistics are gotten up by interested parties, such testimony is to be taken with reserve. As long as Great Britain and the United States have what the rest of the world want, there need be no fear of a loss of trade on account of the system of weights and measures used any more than on account of the language.

To explain American apathy toward "decimal reform" (*alias*, the metric system), you say that "the arithmetical problems of the great majority of persons are almost entirely limited to money matters," in which we already have the advantage of decimals. Is this true? Or does not everyone who goes to market for the necessities of

life have as much of an arithmetical problem to solve regarding the quantity as regarding the value of his purchases? Has he not to calculate length, weight, and volume as well as money? But how do you explain British apathy, which seems to be quite as marked as our own, yet with no decimal currency to account for it? Depend upon it, this apathy has better grounds for its existence than you have here assigned for it.

You say the statement that the metric units are inconvenient in size "betokens ignorance of, or indifference to, the truth." As it was I that made that statement in my letter, I shall be obliged if you will point out, explicitly, wherein I have shown my ignorance of, or indifference to, the truth. You follow up this by a commendation of earth measurement as a basis for a system of weights and measures. This, of course, is good so far as it goes, but surely there is another element besides earth measurement which must enter into any thoroughly scientific as well as practical system of weights and measures, and that is man measurement. Surely the size and strength and convenience of the being who is to use the weights and measures are of as much importance to be considered in their establishment as anything else. And it is just here that one of the great defects of the metric system is most apparent; its units bear no relation whatever to man's dimensions, and it is for this reason, as I asserted, that they are inconvenient. The yard, the foot, the hand, the inch, are approximate human measurements, and so have been found convenient and appropriate, whereas the meter and its divisions, not being so adjusted, are either inconveniently long or preposterously short.

But further, while, as you say, earth measurement affords a natural and appropriate basis for a system of metrology, the line wanted should not be a curved line, neither the meridian of Paris, nor any other meridian, nor yet the "mean of all possible meridians," but a fixed and straight line, of which our planet contains but one, its axis of rotation, a line in every respect adapted to the purpose required. And when we find, as was pointed out by Sir John Herschel, that our inch is within  $\frac{1}{1000}$  of being commensurate with this most natural of all bases, we see that we have in our linear measure, possessing, as it does, both the requisite elements of earth and man commensurability, at least what is far more nearly a perfect unit than the metric unit or any of its divisions.

Far more could be said on this subject than I have brought forward, but this letter is already long enough. My object is not controversy, but to bring out, if only in a partial and imperfect manner, the other side of this question, which is so seldom heard, and if possible to induce others to inquire into it. It is not right that any system should be so largely advertised for its excellences and nothing be said of its defects. It has obtained a foothold in our laboratories that forces the profession to use it to some extent whether they will or not, but if we are to do so, let it be in the full knowledge that, while we consider ourselves too scientific to use the foot and the inch of our forefathers, we have betaken ourselves to a system that measures straight lines with a curve, and a curve whose dimensions were incorrectly determined; in a word, a system whose standards are neither straight nor true.

JOHN FORREST.

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[We judge that our readers have probably "had enough" upon this subject, at least for the present.—ED. MEDICAL NEWS.]

## NEWS ITEMS.

*The Tri State Medical Association of Alabama, Georgia, and Tennessee*, at its recent meeting elected the following officers: President, Dr. Richard Douglass, of Nashville, Tenn.; Vice-Presidents, Dr. Robert M. Harbin, of Calhoun, Ga.; Dr. R. M. Cunningham, of Birmingham, Ala.; Dr. Y. L. Abernathy, of Hill City, Tenn.; Secretary, Dr. Frank Trester Smith, of Chattanooga, Tenn.; Treasurer, Dr. W. C. Townes, of Chattanooga, Tenn.; Recorder, Dr. W. L. Gahagan, of Chattanooga, Tenn. The next meeting is to be held at Chattanooga on the third Tuesday in October, 1893.

*Railway Surgery at the Pan-American Medical Congress.*—A Section of Railway Surgery of the Pan-American Medical Congress has been organized, with Dr. C. W. P. Brock, of Richmond, Virginia, as executive president. At the eleventh annual meeting of the Wabash Railway Surgical Association—the first organization of the kind—Dr. C. B. Stemen, of Fort Wayne, was unanimously requested to prepare a paper on "Organized Railway Surgery," and read the same before the Section on Railway Surgery of the Pan-American Medical Congress.

*The Antiseptic Dropper.*—Dr. Gould thanks a correspondent for information that the little device described in THE NEWS of Dec. 3, 1892, p. 635 (and believed to have been a novelty) had been previously in use in Europe and in Japan. It seems strange that a device so excellent and handy, like many other and more important things, should have to be independently rediscovered, and that it should not have earlier come into general use in America.

*Philadelphia Hospital.*—At a recent meeting of the Department of Charities and Corrections the entire medical staff of the Philadelphia Hospital was reelected. In addition, six new places were created, to which were elected respectively: Dr. J. William White, in surgery; Dr. Judson Daland, Dr. F. A. Packard, Dr. Samuel Wolfe, and Dr. Julius L. Salinger, in medicine; Dr. W. M. L. Coplin, in pathology; and Dr. Alfred Stengel, registrar in medicine.

*Chicago Gynecological Society.*—At the annual meeting, held October 28, 1892, the following officers were elected: President, Dr. E. J. Doering; Vice-Presidents, Dr. Ferdinand Henrotin and Dr. Franklin H. Martin; Secretary, Dr. Henry Parker Newman; Treasurer, Dr. A. H. Foster; Editor, Dr. W. S. Christopher.

*Pubeotomy in Ireland.*—It is announced that on November 22d last Dr. W. J. Smyly, Master of the Rotunda Hospital, Dublin, performed a pubeotomy, the first in the United Kingdom since 1782. At the time of report, nine days after the operation, mother and child were doing well.

*The Biography of Ephraim McDowell, M.D.*—We have received a letter from a correspondent stating that a number of persons have failed to receive copies of the *Biography of Ephraim McDowell, M.D.*, by Mary Young Ridenbaugh, for which advance payment had been made. Can anyone give us any information upon the subject?

*The Culture of Diphtheria-bacilli in Hard-boiled Eggs.*—Dr. Billings, of the Patho-biological Laboratory of Lincoln, Neb., writes us that the method described by Dr. Johnston (THE NEWS, December 10th) has been in use by him since 1886.

*Stellwag v. Carion*, who has been Professor of Ophthalmology at Vienna since 1873, will celebrate his 71st birthday on coming January 23d. Preparations are making for an elaborate observance of the event.

*A New Clinic for Hydrotherapeutics* has been established at Vienna, and placed under the direction of Professor Winternitz.

*Dr. G. E. de Schweinitz* has been elected Clinical Professor of Ophthalmology in Jefferson Medical College.

## BOOKS AND PAMPHLETS RECEIVED.

A Consideration of the Relative Advantages of Colotomy and Sacral Resection for the Formation of an Artificial Anus. By E. E. Montgomery, M.D. Reprint, 1892.

Operative Treatment of the Deformities Resulting from Infantile and Cerebral Spastic Paralysis. By DeForest Willard, M.D., Ph.D. Reprint, 1892.

An Address in Medicine. By J. H. Musser, M.D. Pamphlet, 1892.

Gonorrhea and Its Treatment. By G. Frank Lydston, M.D. Detroit: George S. Davis, 1892.

The Pathology of Pernicious Anemia. By J. P. Crozer Griffith, M.D., and Charles W. Burr, M.D. Reprint, 1892.

Mid-systolic and Late-systolic Murmurs. By J. P. Crozer Griffith, M.D. Reprint, 1892.

The Treatment of Hypertrophic Rhinitis by Electrolysis. By W. Scheppegrell, A.M., M.D. Reprint, 1892.

Ninth Report of the Committee on Lunacy of the Board of Public Charities of the Commonwealth of Pennsylvania. Harrisburg: Edwin K. Myers, State Printer, 1891.

Cure Radicale des Hernies avec une Étude Statistique de deux cent soixante-quinze Opérations et 50 figures intercalées dans le texte, par Le Just Lucas-Championnière. Paris: Rueff et Cie, 1892.

Die Lehre von den Nasenerkrankungen mit besonderer Rücksicht auf die Erkrankungen des Sieb- und Keilbeins und deren chirurgische Behandlung, mit 5 Abbildungen. Von Dr. Ludwig Grünwald. München und Leipzig: J. F. Lehmann, 1892.

The Differential Diagnosis of Rubella and Rubella, with Especial Reference to the Enlargement of the Glands of the Neck. By J. P. Crozer Griffith, M.D. Reprint, 1892.

Two Cases of Conservative Surgery. By F. Robert Zeit, M.D. Reprint, 1892.

Adenoid Vegetations of the Pharynx a Frequent Cause of Deafness in Children; Their Removal. By S. Latimer Phillips, M.D. Reprint, 1892.

Recent Progress in Diseases of the Brain and Nervous System. By F. Robert Zeit, M.D. Reprint, 1892.

Postscript to Essay Sixty. By William Sharp, M.D., F.R.S. Pamphlet. London: George Bell & Sons, 1892.

The Early History of Instrumental Precision in Medicine. By S. Weir Mitchell, M.D., LL.D. New York: "The Century" Company, 1892.